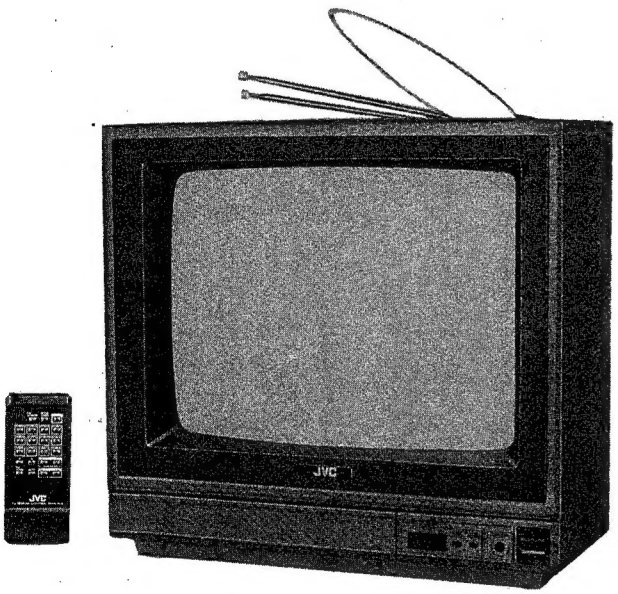
JVC

SERVICE MANUAL

14" COLOR TV

MODEL C-1336 (CAT)



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* **WITH SCHEMATIC DIAGRAM & SERVICE ADJUSTMENT (NTSC)**

- **BASIC CHASSIS: VX-SHASSIS**
- **SAME TYPE MODEL: C-1350**

SPECIFICATIONS

Dimension	: (W) 37.0 cm × (D) 37.8 cm × (H) 35.0 cm
Weight	: 10.3 kg
GND.	: Live & Neutral GND.
TV System & Color System	
VHF/UHF	: CCIR(M), NTSC
TV Receiving Channel & Frequency	
V_L Band (2~6)	: 54 MHz~88 MHz
V_H Band (7~13)	: 174 MHz~216 MHz
UHF Band (14~69)	: 470 MHz~806 MHz
Intermediate Frequency	
Video IF Carrier	: 45.75 MHz
Sound IF Carrier	: 41.25 MHz (4.5 MHz)
Color Sub Carrier	: 3.58 MHz
ANT. Input Impedance	: 75 Ω Unbalanced (VHF) 300 Ω Balanced (UHF)

Power Input	: AC120 V, 60 Hz
Input Current	: 1.15 A
Picture Tube	: 14" In-Line Type
Viewable Picture Size	: (W) 28.1 cm × (H) 21.1 cm
High Voltage	: 24 kV ± 1 kV (at zero beam current)
Speaker	: 8 cm round type, 8 Ω
Audio Power Output	: 1.2 W
Video Input	: 1 Vp-p, 75 Ω
Audio Input	: 390 mVrms (−6 dB) High Impedance
Tube	: 1
IC.	: 12 (in TV), 1 (in Remocon)
Transistor	: 23 (in TV), 2 (in Remocon)

(Design and specifications subject to change without notiece)

SAFETY PRECAUTION

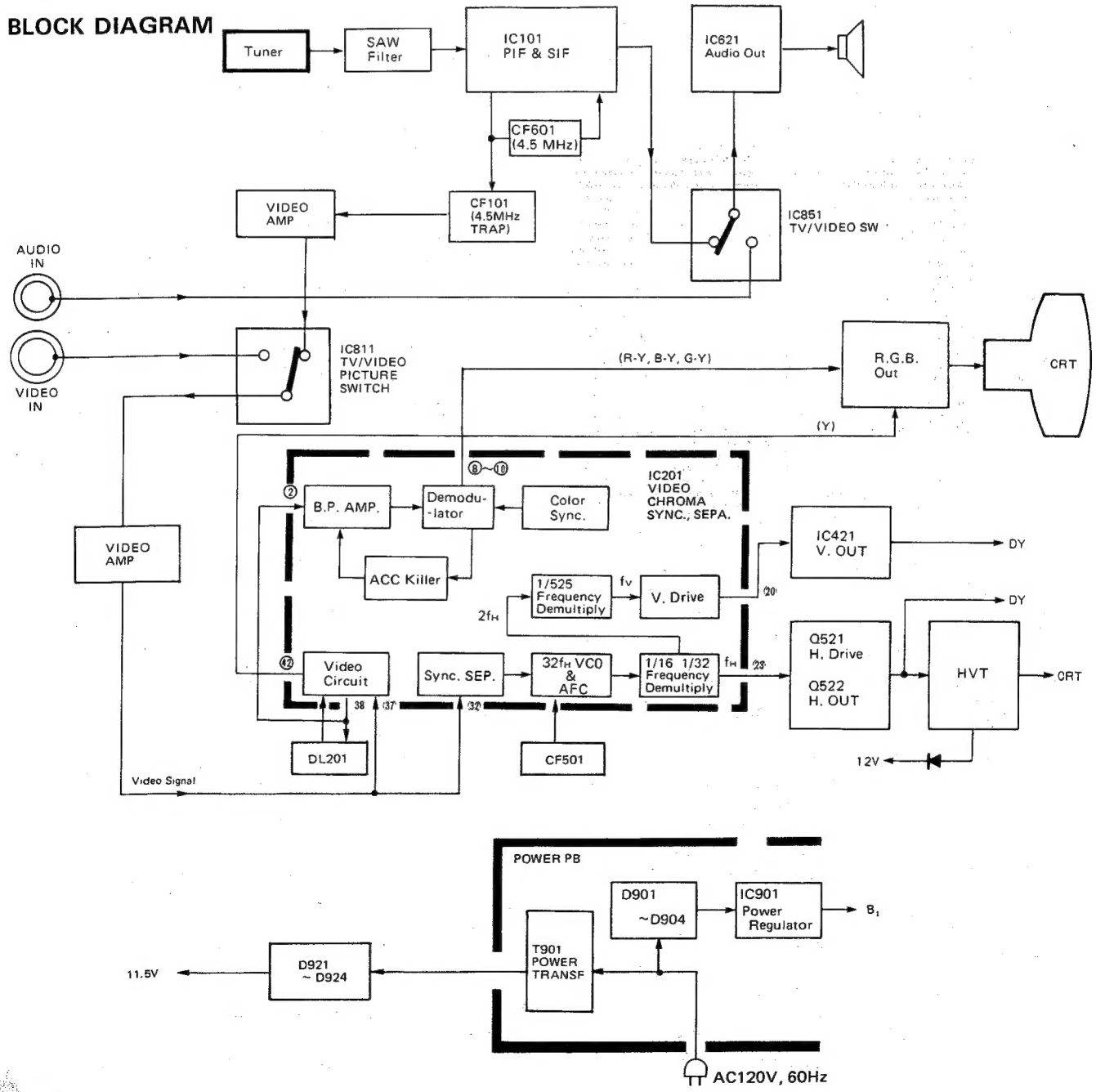
As for safety precautions including electric shock prevention, use of designated components, or safety inspection after servicing, refer to the appended NTSC.

FEATURES

- Adopts IC's into which video, sync, and chroma circuits are one-pack incorporated.
  Also employed is a new-type chassis mounted with a one-chip microcomputer for sensor control.
- On-screen display of channels, sound volume and video.
- Provided with a 60-min. sleep timer.
- Remote-control device facilitates selections on channels, sound volume, power ON/OFF, muting, sleep timer, TV/video and on-screen.
- With audio, video input terminal.
- Channel display button permits free changing of channel displays.

OUTLINE

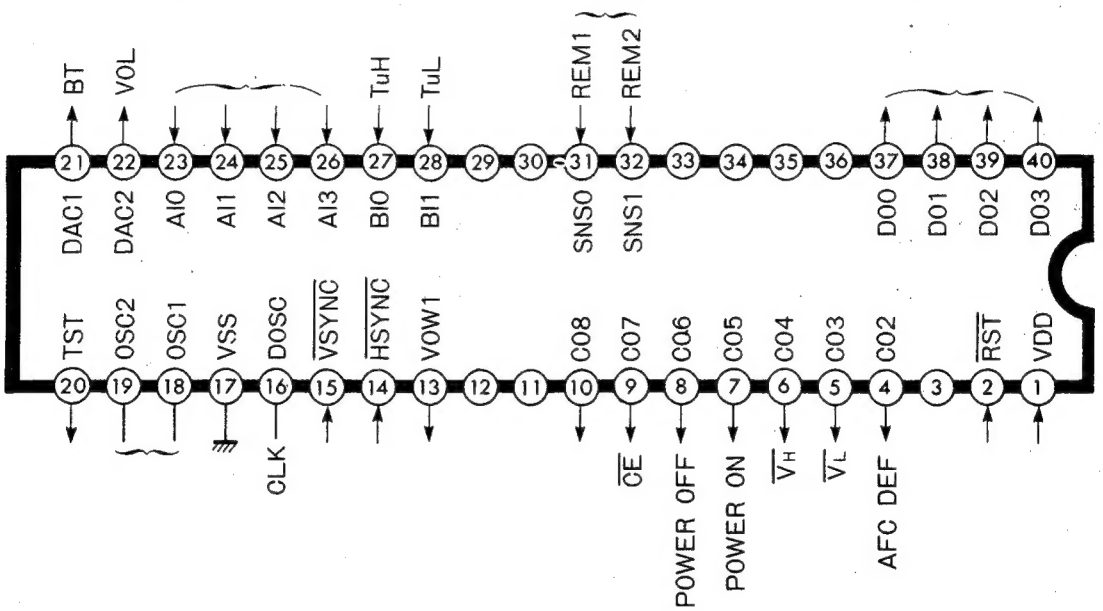
BLOCK DIAGRAM



■ Video, Sync. and chroma circuit in this model are incorporated into a 42 pin LSI(IC201), eliminating the need for adjusting color Sync., V. Sync. and H. Sync.

1. Video signals video-detected by the IC101 and video signals from VIDEO IN terminal are input into the No. (32) and No. (37) pins of IC201 through switching IC. Those signals input through the No. (37) pin are subjected to pedestal clamping/picture adjusting and output through the No. (38) pin.
   After being delayed by the DL201, these signals are once more input into the IC201, subjected to brightness adjustment and amplification, and then distributed to respective chroma output circuits through outputting from the No. (42) pin (Y signals).
2. On the other hand, the other group of signals than signals input through No. (37) pin and output through No. (38) pin passes through the BPT, is input through the No. (2) pin of IC201, and is demodulated after being subjected to BP amplifying by the chroma signal circuits, outputting color difference signals through the No. (8), (9) and (10) pins.
   Meanwhile, those signals input through the No. (32) pin — namely, sync. signals are separated by the sync. separation circuits in IC201 and input into the AFC circuit in IC201.
3. The 32fH oscillation circuit in IC201 is a free-fun type requiring no adjustment by the VCO using a CF501 ceramic filter. H. frequency is obtained by dividing it into 1/32 and output through No. (23) pin, while V. frequency is obtained by dividing it into 1/525 after effecting 1/16 frequency demultiply to get 2fH, and output through No. (20) pin after V. drive. Refer to the BLOCK DIAGRAM for repair service.

• IC721 SENSOR CONTROL IC

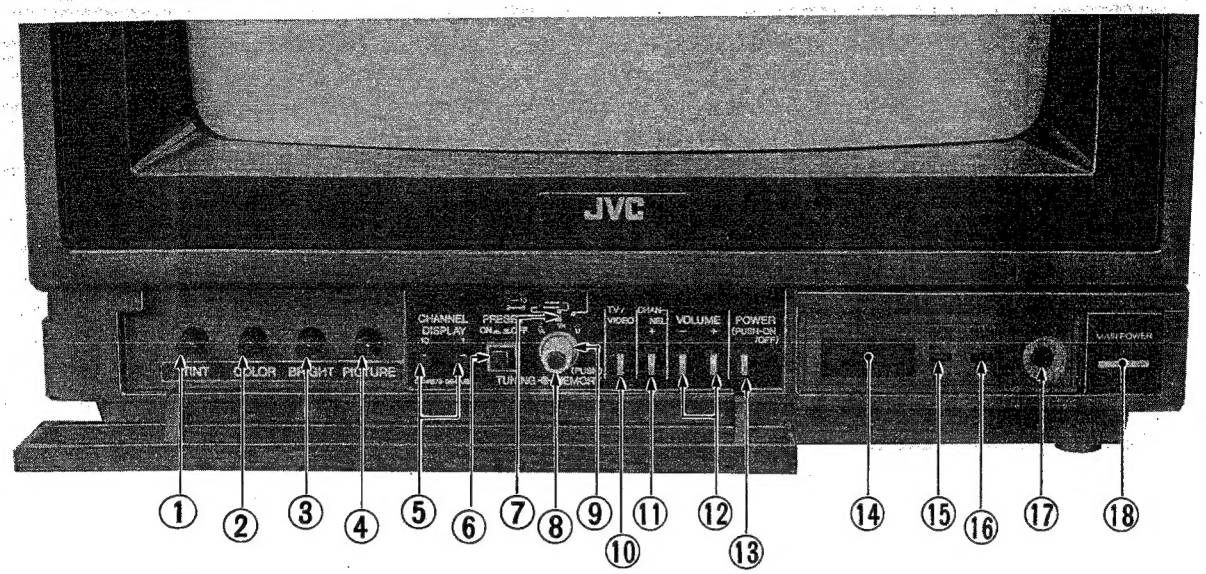


PIN FUNCTIONS

Pin No.	Name	Function	Pin No.	Name	Function
1	VDD	+5 V power supply input	16	CLK (DOSC)	Oscillation terminal for on-screen display
2	$\overline{\text{RST}}$	Reset input			
		Resetting under "L" with	17	GND (VSS)	Grounding
		main power supply "ON"	18	(OSC1)	External-connection terminal for CPU clock oscillation circuit (500 kHz)
4	AFC DEF (C02)	AFC defeat output			
5	$\overline{\text{VL}}$ (C03)	Band switching output	19	(OSC2)	
6	$\overline{\text{VH}}$ (C04)	"	20	(TST)	Sleep timer display output
7	POWER ON (C05)	Power supply "ON" output	21	BT (DAC1)	Tuning DA converter output
8	POWER OFF (C06)	Power supply "OFF" output	22	VOL (DAC2)	Sound-volume-controlling DA converter output
9	$\overline{\text{CE}}$ (C07)	Chip enable output			
10	(C08)	Program output	23 ~ 26	(AI0 ~ AI3)	4-bit key scan input
13	(VOW1)	On-screen display letter output	27	TuH (BI0)	Tuning signal input (input from pressetting comparator)
14	$\overline{\text{(HSYNC)}}$	H. sync signal input	28	TuL (BI1)	
		(negative polarity)	31	REM1 (SNS0)	Remote-controlled data input
15	$\overline{\text{(VSYNC)}}$	V. sync signal input	32	REM2 (SNS1)	
		(negative polarity)	37 ~ 40	(D00 ~ D03)	4-bit key scan output

FUNCTIONS

(Front view)



■ FRONT CONTROL

① **Tint control**

② **Color control**

③ **Bright control**

④ **Picture control**

⑤ **Channel display button**
This button causea the display of received channel numbers on the screen.
"1-place" button ..... Each pressing changes channel "0" through "9".
"10-place" button .... Each pressing changes channel "no display" and "1" through "9".

* Only the channel display changes.
* Selection of broadcasting stations is not possible.

• Channel Memory Presetting

⑤ CH. display button/ ⑥ preset button/ ⑦ Band Switch/ ⑧ Memory button/ ⑨ Tuning-konb

1. Press the **preset button** "ON".
2. Press the channel button (on remote-control device) of the desired channels.
3. Preset the **band switch** as follows:
   For memorizing channels 2~6 → VL (VHF)
   For memorizing channels 7~13 → VH (VHF)
   For memorizing channels 14~69 → U (UHF)
4. Rotate the **tuning knob** and receive pictures from those broadcasting stations desired to be memorized.
5. By pressing the **channel display button,** display the channel number of the broadcasting station from which the picture was displayed.
6. Press the **memory button** (the channel display flickers once).
7. After completing the memorizing of all desired station channels, press the **preset button** "OFF".

*Prior to shipment from the factory, standard presetting to permit sequential channel changing from channel 2 through 13 is applied to the TV units.

⑥ **Preset button** (AFC (Automatic fine-tune control))
No exclusive AFC < ON ⇔ OFF > switch is provided on this TV unit; However by setting the Preset button "ON", the AFC circuit can be switched "OFF".

⑩ **TV/Video button**
Each time the TV/Video button is pressed, the mode is set to TV mode or Video mode.
* In TV mode, the input at the antenna terminal is used. In Video mode, the input at the Video input terminal is used.

⑪ **Channel up-button**

⑫ **Volume up-Down button**

⑬ **Power button**
Press the power button while the unit is in standby mode, then, power is supplied and the TV set operates. Press the power button again to turn the power off. The unit is set to standby mode.

⑭ **Remocon Sensor**

⑮ **Sleep timer indicator**
Lights when the sleep timer button (on remote control device) is pressed to set the sleep timer.
When the sleep timer is released, the indicator goes off.

⑯ **Main power indicator**
Lights when the main power button is pressed. Goes off when the main power is shut off.

⑰ **Earphone jack**

⑱ **Main Power button**
Press the main power button. Then, the main power indicator lights and the unit is set to standby mode. Press the button again to turn the main power off.

■ REAR TERMINAL

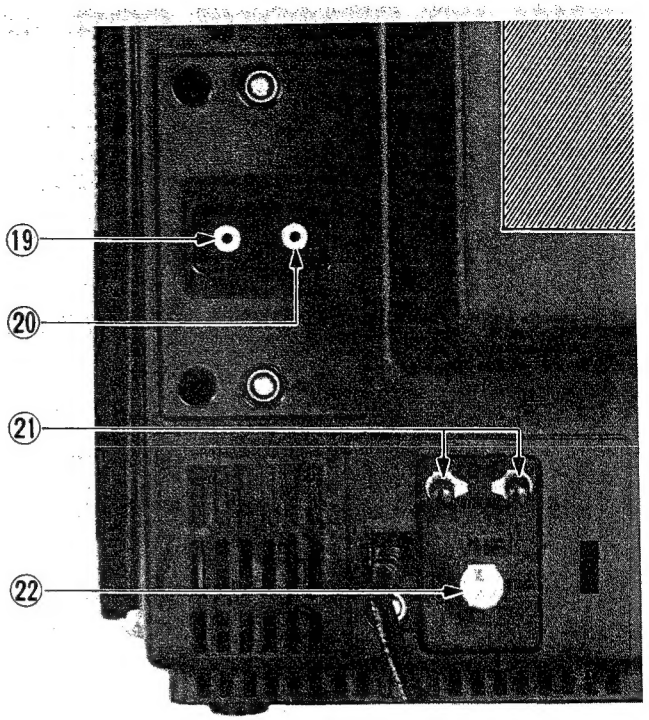
⑲ Video input terminal
The terminal for monitoring by connecting the video output from a video camera, VTR or other equipment.

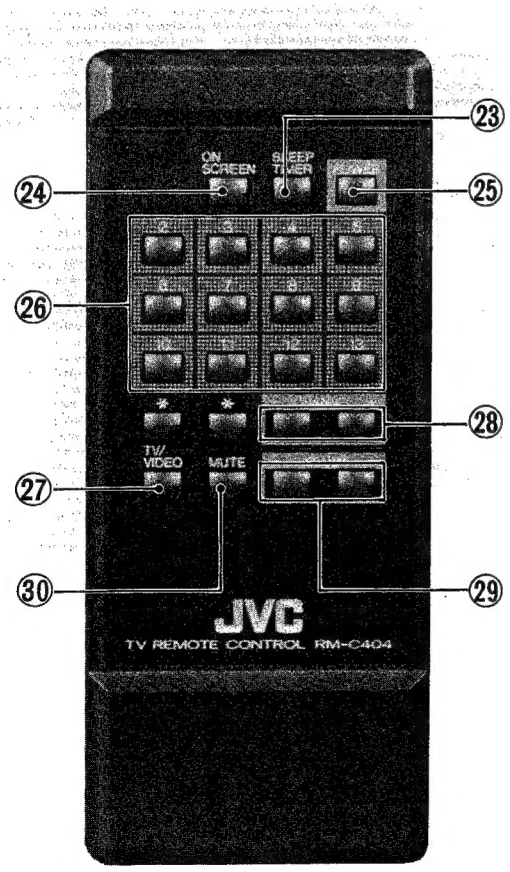
⑳ Audio input terminal
The terminal for monitoring by connecting the audio output from a videocamera, VTR or other equipment.

㉑ UHF antenna termianl
300 Ω feeder from UHF outdoor antenna or UHF loop antenna.

㉒ VHF antenna terminal
75 Ω coaxial cable from VHF outdoor antenna or 300 Ω feeder from VHF rod antenna [Though the Conversion plug (300 Ω → 75 Ω)]

* For better reception, use the outdoor VHF & UHF antenna.





■ REMOTE CONTROL

㉓ Sleep timer button

㉔ On-screen button
When the on-screen button is pressed, screen display is obtained. Press it again to turn the display off.

㉕ Power button
Press the power button when the TV set is in standby mode. Then, the TV set is activated. Press the button again to the turn the power off. The TV set is set to standby mode.

㉖ Direct channel button

㉗ TV/Video button

㉘ Up/down channel button

㉙ Up/down Volume button
Digits indicating the sound volume (00 — 50) are displayed on the screen for numerical checking of the volume.

㉚ Mute button
Press the mute button. Then the volume indication digits become "00" and the sound disappears while the button is pressed. Press the button again to obtain the sound again (reset).

HOW TO REMOVE FOR SERVICE

■ REMOVING THE REAR COVER

1. Remote the seven screws Ⓐ shown in Fig. 1 and detach the rear cover by pulling it backward.
   *When reinstalling the rear cover, carefully push it inward after inserting the main PC Board into the rear cover groove.

■ REMOVING THE MAIN P.B. & POWER P.B. CHASSIS

* After removing the drear cover.
1. Remote the three screws marked Ⓐ in Fig. 2. Then remove the anode wire and other wires (if necessary).
2. Withdraw the main PB and power PB chassis backward along the rail.

*When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the main P.B.

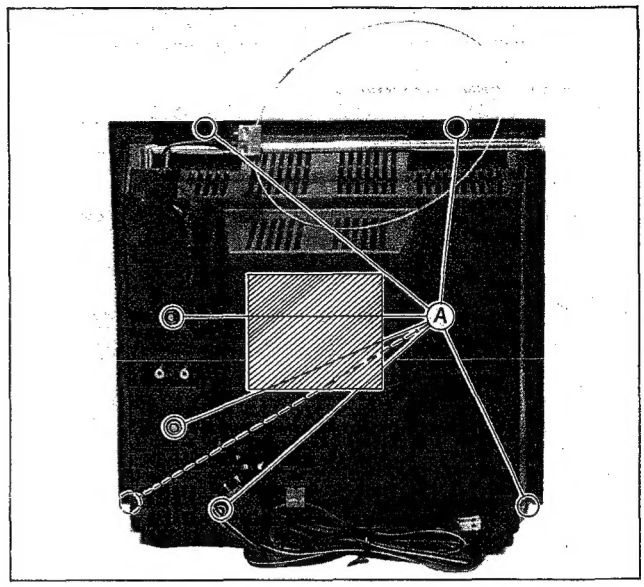


Fig. 1

■ WIRE CLAMPING AND TYING BAND

1. Be sure to clamp the wire.
2. Never remove the tying band used for wire clamping. Should it be removed, be sure to reclamp the wire in its original position.
   (Be sure to use insulating material.)

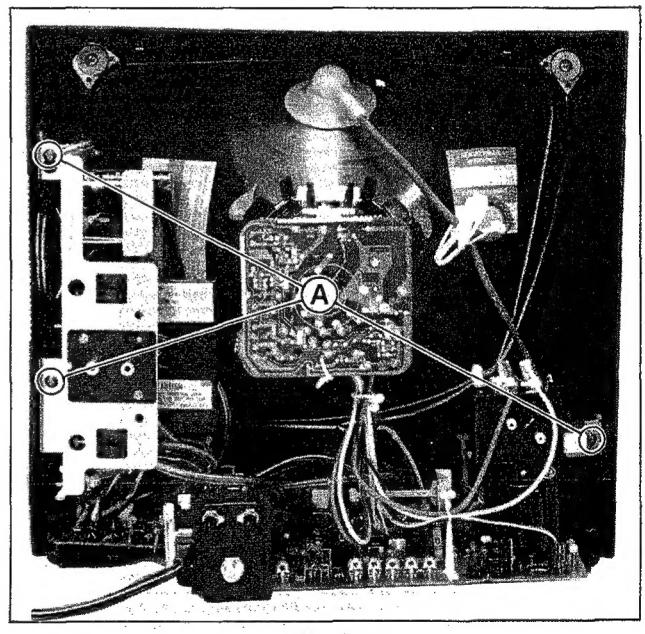


Fig. 2

SERVICE ADJUSTMENTS

REGARDING GENERAL OR CHROMA ADJUSTMENTS, REFER TO THE APPENDED NTSC.
AS TO THE FOLLOWING ITEMS, OBSERVE THE RESPECTIVE INSTRUCTIONS GIVEN HEREIN.
As for the test points and respective volume adjusting positions, refer to the schematic diagram and the section on "alignment locations" appearing in the same diagram.

■ NOTICE FOR APPENDED "NTSC" ADJUSTMENT

As to the following adjustment, adjust by referring to appended NTSC adjustment.

- **Safety precaution**
- **Purity, Convergence and White balance**
- **Horizontal Line**
- **B1 Voltage adjustment**
- **Sub Picture adjustment**
- **Sub Tint adjustment • Noise adjustment**
- **Sub Color adjustment**
- **V. Height adjustment**
- **On-Screen (CLK) adjustment**
- **V. IF adjustment**
- **RF. AFC adjustment**
- **S. IF adjustment**

■ HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. High voltage hold down circuit.
   After repair of the high voltage hold down circuit shown in Fig. 1, this circuit shall be checked to operate collectly.
2. Checking method of the high voltage hold down circuit.
   (1) Make the short circuit across the R905, 470 Ω 15 W UNF R (shown in Fig. 2, [----]) under normal operating condition.
   (2) Confirm the picture goes out.

■ SUB BRIGHTNESS

1. Set the Bright, Color, Tint and picture knobs to central position respectively.
2. Adjust the sub bright VR (R231) to obtain the optimum brightness.

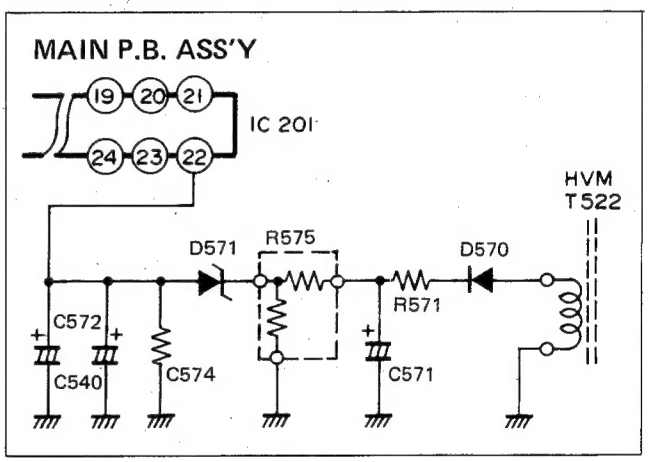


Fig. 1

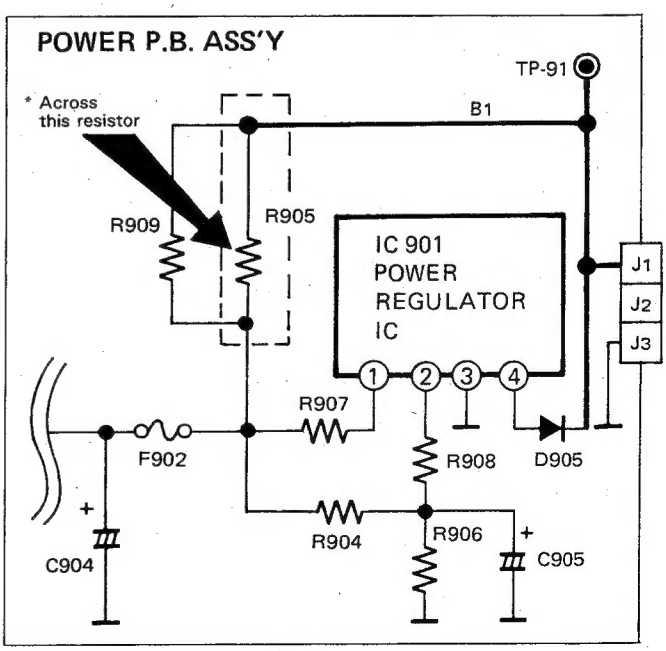
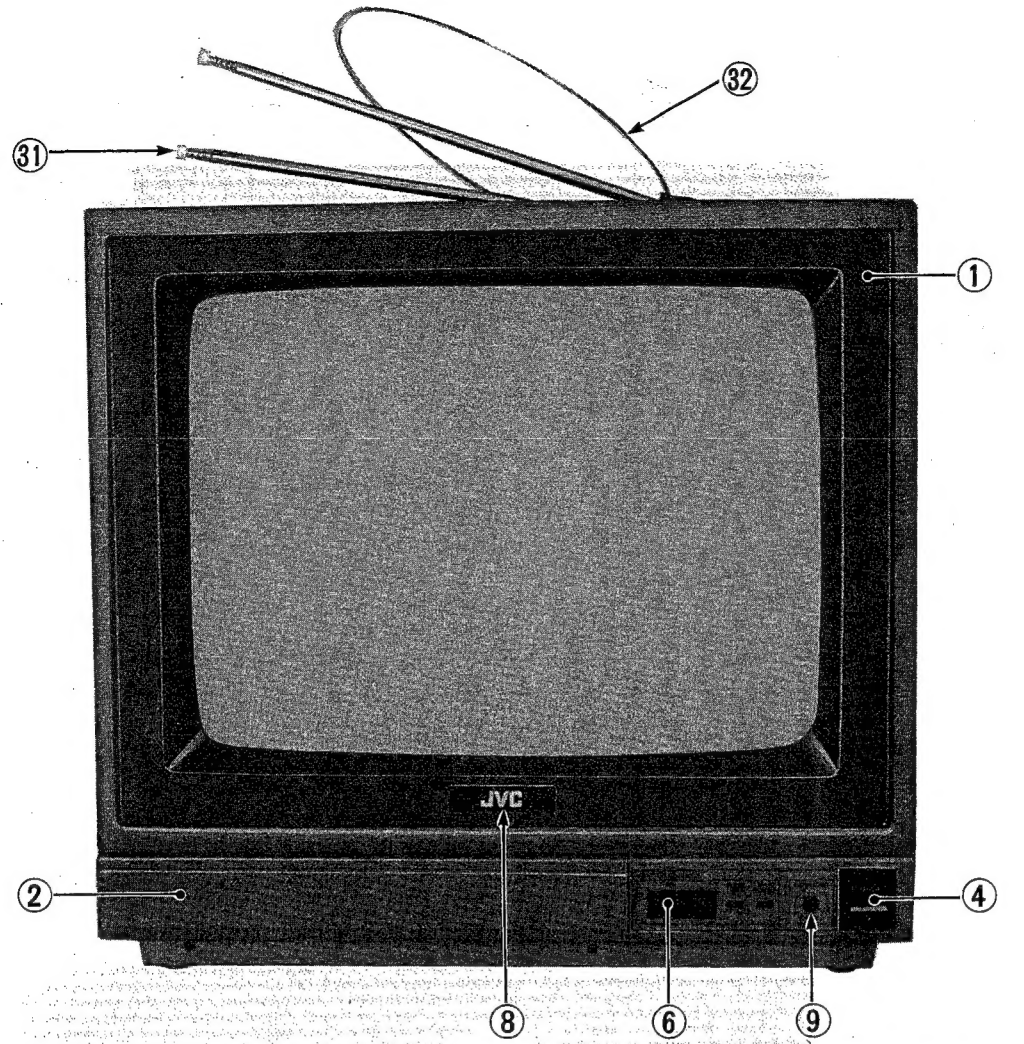


Fig. 2

REPLACEMENT PARTS LIST

CHASSIS AND CABINET PARTS LIST

VIEW No.	SYMBOL No.	⚠	PART No.	PART NAME	REMARK
1			CM10200-00S-M0	Front Cabinet Ass'y	
2			CM30845-017	Door	Within Front Cabinet Ass'y
3	—		CM41673-004	Operation Sheet	〃
4			**CM41674-004**	Push Knob (Main power)	〃
5			CM30861-001	Spring (Main power)	〃
6			CM41675-00E-V0	Remocon Window	
7			CM41891-001	Control Plate	Within Front Cabinet Ass'y
8			C40590	JVC Mark	〃
9	J1621		**CEX40288-001**	Earphone Jack	
10	SP01		**EAS-8P16ST**	Speaker	
11	V01	⚠	**CPJ370BVBK1U-T**	Picture Tube	
12			A48457	Spring (Picture Tube)	
13	L01	⚠	C30172-P	Degaussing Coil	
14	DY01	⚠	**CE20095-00A-KD**	Def Yoke	
15		⚠	**CJ39544-756-75**	Focus Pack	
16	T1522	⚠	**CJ26433-00A-KD**	HV Transf.	
17			CE40305-00B	PC Magnet	
18			A46445	Focus Cover	(x3)
19			CE40764-00A	Wedge Ass'y	(x3)
20			CM41678-B01	Push Knob	Preset Switch
21			CM41677-A01	Knob Cap.	Main Power
22		⚠	**CM30926-00B-V0**	Ant. Terminal Ass'y	
23			CM10193-007-MT	Rear Cover	
24			CM21033-001-T	Rating Label	
25			GBSA4016N	Tap Screw	(x7)
26			CM41887-001	Push Knob	(x2) CH display
27	Q1522	⚠	2SD1554	Si Transistor	H. Out
28			N47971	Cord Clamp	
29		⚠	**QMP1650-244R**	Power Cord	
30			CH30168-00B	Braided Ass'y	
31			**A37963-BA**	Rod Ant. Ass'y	
32			**C40910-A**	UHF Loop Antenna	
33			CE40128-002	75 Ω Conv. Adaptor	
34		⚠	**CM20615-A0A**	AV Terminal Ass'y	
35	R1230, R1240 R1330, R1333		**QVCA002-CB14M**	VR	(x4) Bright, Picture, Tint, Color
36	R1701		**A76104-20K**	VR Ass'y (Band SW, Memory, Tuning)	
37	D1706		SEL1910D	LED	Sleep Timer Indicator
38	D1926		SLR-54UR5	〃	Main Power Indicator
39	UV1001	⚠	**AK7012EZ-B03**	VHF/UHF E. Tuner	
40	S1201		QSL4A13-C02	Lever Switch	Service Switch
41	S1701		QST3101-C03	Push Switch	Preset Switch
42	S1702~8		QSP4H11-C03	〃	CH Display, Power CH +, Vol. ±, TV/Video
43	S1901	⚠	**QSP2J11-C01**	Power Switch	Main Power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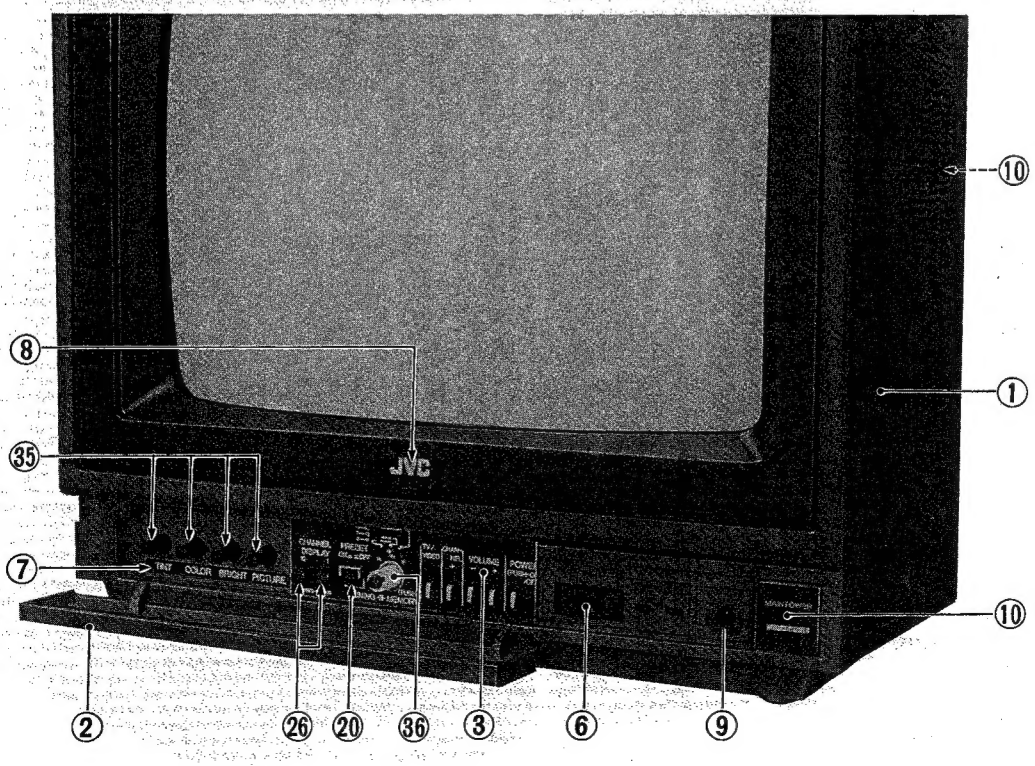
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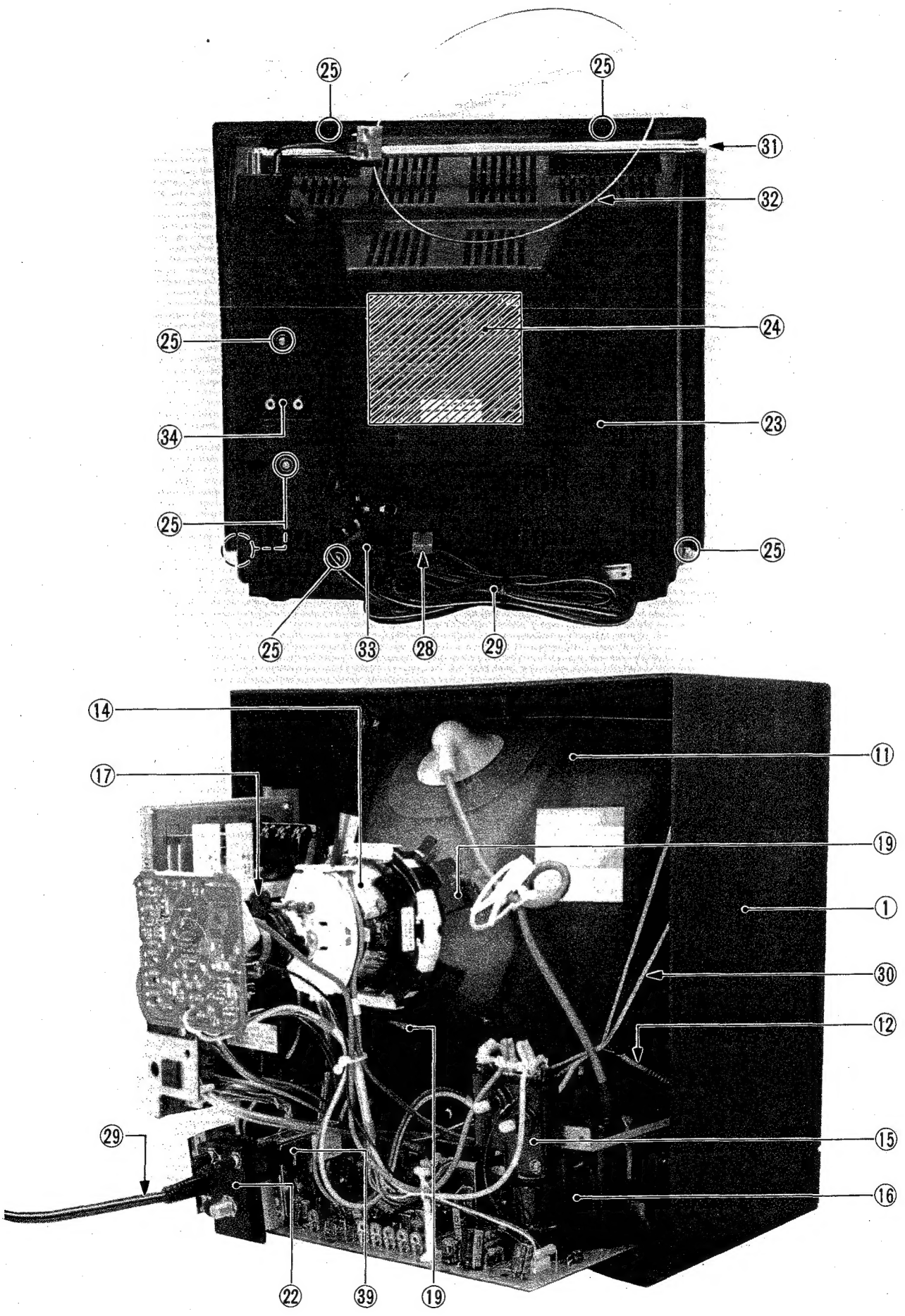
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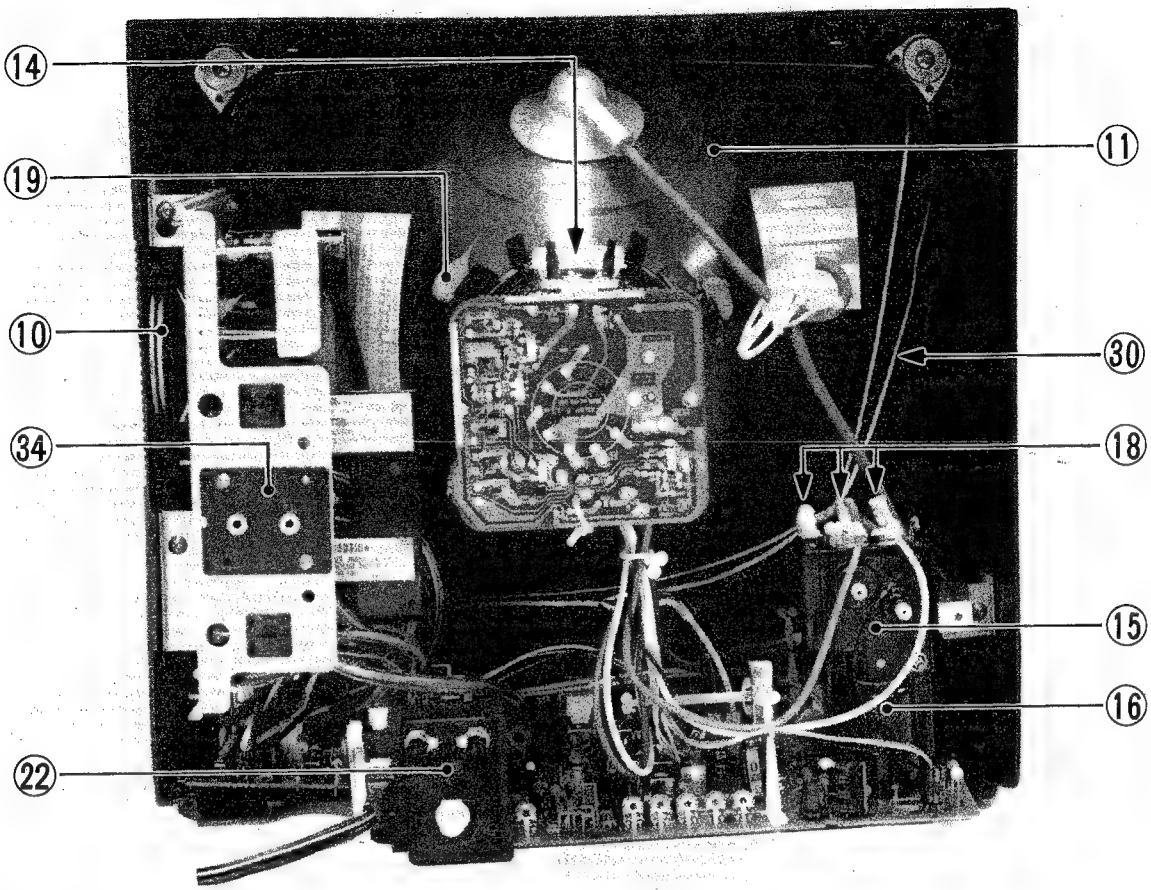
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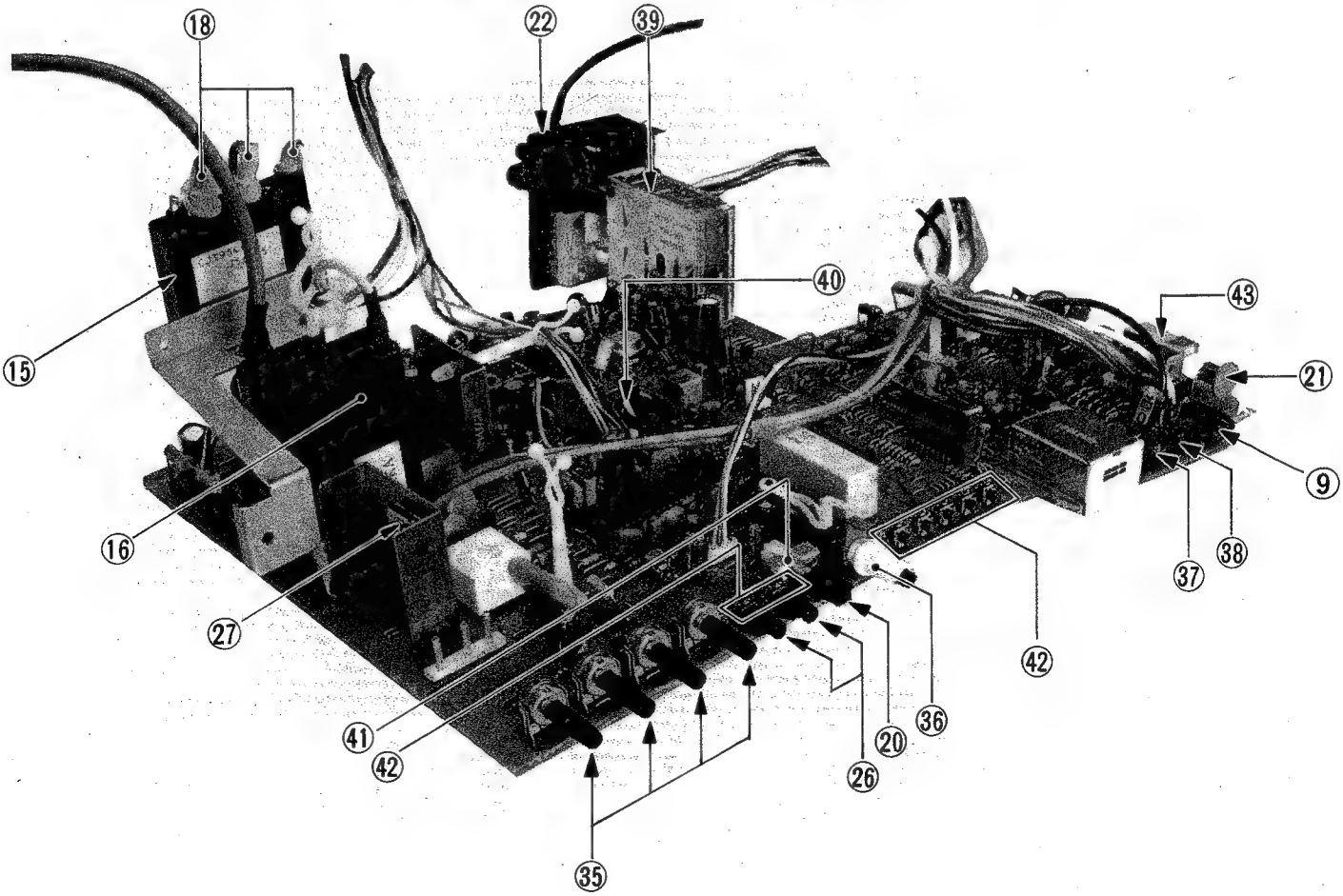
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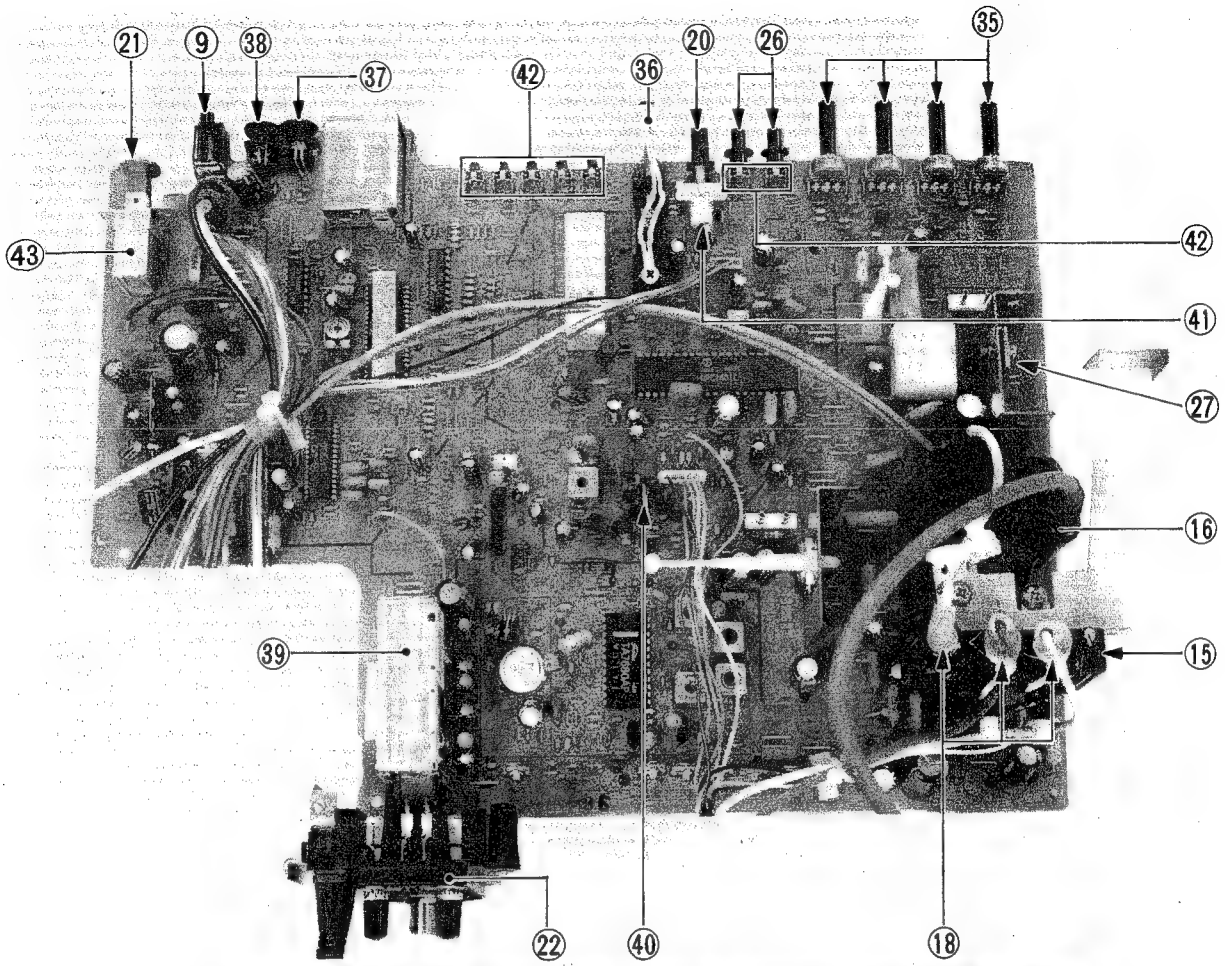
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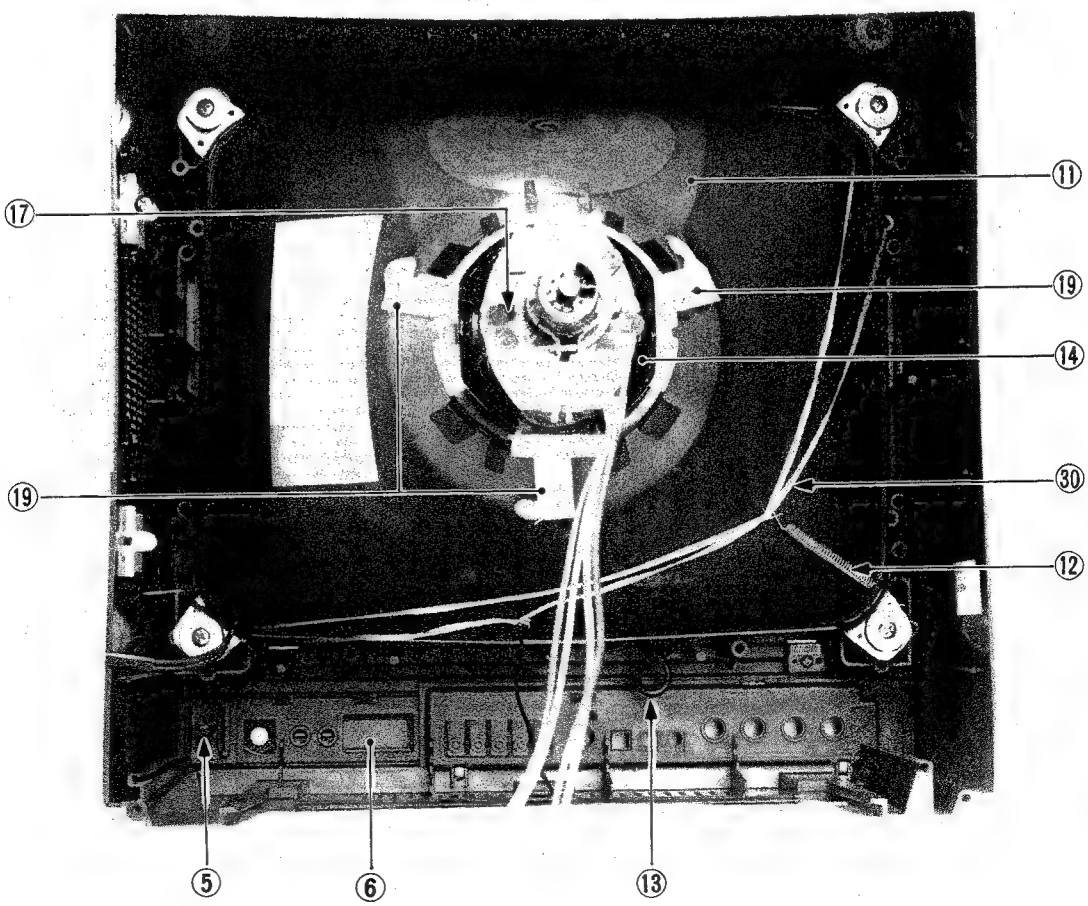
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SX-1158A (MAIN P.B. ASS'Y)

SYMBOL No.	⚠	PART No.	PART NAME	REMARK
VARIABLE RESISTOR				
R1104		CEX40197-014	VR	10kΩ B (Noise)
R1230		QVCA002-CB14M	〃	〃 (Bright)
R1231		CEX40197-023	〃	2kΩ B (Sub Bright)
R1240		QVCA002-CB14M	〃	10kΩ B (Picture)
R1241		CEX40197-014	〃	〃 (Sub Picture)
R1330		QVCA002-CB14M	〃	〃 (Tint)
R1333		〃 -CB14M	〃	〃 (Color)
R1341		CEX40197-014	〃	〃 (Sub Tint)
R1342		〃 -014	〃	〃 (Sub Color)
R1352		CEX40202-014	〃	〃 (B. Cutoff)
R1354		〃 -014	〃	〃 (G. Cutoff)
R1356		〃 -014	〃	〃 (R. Cutoff)
R1369		〃 -022	〃	200Ω B (G. Drive)
R1371		〃 -022	〃	200Ω B (R. Drive)
R1404		CEX40197-013	〃	1kΩ B (V. Height)
R1701		A76104-20K	〃	20kΩ B (Preset VR)
R1723		CEX40202-023	〃	2kΩ B (CLK)
RESISTOR				
R1010	⚠	QRD149J-150S	CR	15Ω 1/4W J
R1011	⚠	QRG029J-183	OM R	18kΩ 2W 〃
R1012	⚠	〃 -183A	〃	〃 〃
R1116	⚠	QRD149J-100S	CR	10Ω 1/4W 〃
R1357	⚠	QRG019J-153S	OMR	15kΩ 1W 〃
R1358	⚠	〃 -153S	〃	〃 〃 〃
R1359	⚠	〃 -153S	〃	〃 〃 〃
R1373	⚠	QRD161J-3R9Y	CR	3.9Ω 1/6W 〃
R1410	⚠	QRX019J-4R7S	MF R	4.7Ω 1W 〃
R1431	⚠	〃 -2R2S	〃	2.2Ω 〃 〃
R1524	⚠	QRG019J-221S	OM R	220Ω 〃 〃
R1526	⚠	〃 -472S	〃	4.7kΩ 〃 〃
R1527	⚠	QRD161J-273Y	CR	27kΩ 1/6W 〃
R1528	⚠	〃 -683Y	〃	68kΩ 〃 〃
R1532	⚠	QRX029J-6R8	MF R	6.8Ω 2W 〃
R1533	⚠	〃 -5R6A	〃	5.6Ω 〃 〃
R1554	⚠	QRG029J-332	OM R	3.3kΩ 〃 〃
R1561	⚠	QRX019J-4R7S	MF R	4.7Ω 1W 〃
R1562	⚠	〃 -1R5S	MF R	1.5Ω 〃 〃
R1571	⚠	〃 -4R7S	〃	4.7Ω 〃 〃
R1574	⚠	QRD161J-472Y	CR	4.7kΩ 1/6W 〃
R1575	⚠	CJ39520-00V	R Block	
R1582	⚠	QRD122J-680S	CR	68Ω 1/2W 〃
R1628	⚠	QRD161J-4R7Y	〃	4.7Ω 1/6W J
R1812	⚠	〃 -560Y	〃	56Ω 〃 〃
R1901	⚠	QRC122K-225E	Comp. R	2.2MΩ 1/2W K
R1923	⚠	QRD141J-102SY	CR	1kΩ 1/4W J
CAPACITOR				
C1005		QEC01HM-104MZ	E Cap.	0.1μF 50V M
C1007	⚠	QET51CR-477	〃	470μF 16V R
C1110		QCT25CH-121AZ	C Cap.	120pF 50V J
C1111		〃 -180AZ	〃	18pF 〃 〃
C1113		QEC01HM-474MZ	E Cap.	0.47μF 〃 M
C1201		QEN61HM-475Z	BP E Cap.	4.7μF 〃 〃
C1208	⚠	QETB1CM-228	E Cap.	2200μF 16V 〃
C1308		QEN51HM-335	BP E Cap.	3.3μF 50V 〃
C1355		QCZ9017-102M	C Cap.	1000pF 3KV P
C1423	⚠	QEU51VM-107M	E Cap.	100μF 35V M
C1431	⚠	QETB1VM-477	〃	470μF 35V 〃
C1507		QFP31HG-272S	PP Cap.	2700pF 50V G
C1522	⚠	QET61HR-105Z	E Cap.	1μF 〃 M
C1526	⚠	QFZ0081-6701S	MPP Cap.	6700pF 1.6KV ±3%
C1527	⚠	QEZ0077-106M	E Cap.	10μF 250V H
C1528	⚠	QET52CR-336	〃	33μF 160V R
C1529		QFZ0067-534S	PP Cap.	0.53μF 200V K
C1532	⚠	QETB1CM-108	E Cap.	1000μF 16V M
C1561	⚠	QETB1CM-477	〃	470μF 16V 〃
C1571	⚠	QET61ER-107Z	〃	100μF 25V 〃
C1572	⚠	QET51AR-107	〃	100μF 10V R

SYMBOL No.	⚠	PART No.	PART NAME	REMARK
C1629	⚠	QETB1AM-477	E Cap.	470μF 10V M
C1631	⚠	QETB1CM-228	〃	2200μF 16V 〃
C1813	⚠	QET61CR-336Z	〃	33μF 〃 〃
C1852		QEN61HM-105Z	BP E Cap.	1μF 50V 〃
C1901	⚠	QCZ9016-222A	C Cap.	2200pF AC 125V 〃
C1922	⚠	QET61CR-476Z	E Cap.	47μF 16V 〃
C1531	⚠	QET51ER-477	〃	470μF 25V 〃
TRANSFORMER				
T1103		A75588-B	AFC Transf.	
T1104		A75899	CW Transf.	
T1301		A75196	3.58 BP Transf.	
T1521	⚠	CE40361-00B	H. Drive Transf.	
T1601		CE40121-101	SIF Transf.	
T1602		A75583	S Take Off Transf.	
T1781		CE40304-001	BP Transf.	
COIL				
L1102		A76186-1.0Z	Peaking Coil	1μH
L1103		〃 -15Z	〃	15μH
L1105		〃 -8.2	〃	8.2μH
L1120		〃 -1.5	〃	1.5μH
L1201		CE40547-330	〃	33μH
L1301		A76186-2.7	〃	2.7μH
L1303		〃 -15Z	〃	15μH
L1351		QQL043K-181	〃	180μH
L1521		A76186-100	〃	100μH
L1602		〃 -22Z	〃	22μH
L1721		〃 -2.2	〃	2.2μH
L1771		CE40547-121	〃	120μH
L1815		A76186-12Z	〃	12μH
DIODE				
D1001		1SS133-Y	Si. Diode	
D1031		〃	〃	
D1201		1SS178-Y	〃	
D1203		1SS133-Y	〃	
D1204		〃	〃	
D1231		〃	〃	
D1421	⚠	1SR35-100-F	〃	
D1422	⚠	05AZ75	Zener Diode	
D1431	⚠	V19E-4	Si. Diode	
D1501		MA4120(M)-Y	Zener Diode	
D1521	⚠	RH1S-LFA1	Si. Diode	
D1531	⚠	1SR124-400V-F	〃	
D1561	⚠	1SR124-400V-F	〃	
D1570		1SS81	〃	
D1571	⚠	HZ7B2LV1	Zener Diode	
D1581		1SS133-Y	Si. Diode	
D1591	⚠	1SR124-400-F	〃	
D1701~4		1SS133-Y	〃	
D1706		SEL1910D	LED	Sleep Timer ind.
D1707		1SS133-Y	Si. Diode	
D1711~14		〃	〃	
D1720~22		〃	〃	
D1723,24		〃	〃	
D1741		〃	〃	
D1751		MA4047(M,H)-Y	Zener Diode	
D1753		MA4270(M)-Y	〃	
D1762		1N34A	Ge.Diode	
D1781		PD49PI	Photo Diode	
D1791		1SS133-Y	Si. Diode	
D1821		〃	〃	
D1871		〃	〃	
D1921~24	⚠	1SR35-100-F	〃	
D1925	⚠	1SS133-Y	〃	
D1926		SLR-54UR5	LED	Main Power ind.
D1927		RD12F(B1)	Zener Diode	
D1928		MA4150(M)	Si. Diode	

SYMBOL No.	⚠	PART No.	PART NAME	REMARK
D1929		1SR35-100-F	Si. Diode	
D1930		1SS133-Y	〃	
TRANSISTOR				
Q1001		2SK105(E,F)	FET	or 2SK301(O,P)
Q1031		2SC1740(Q,R)-L	Si. Transistor	
Q1101		2SA1015(Y,GR)L	〃	
Q1120		2SC1360	Si. Transistor	
Q1321		2SC1740(Q,R)-L	〃	
Q1351~53		2SC2482	〃	
Q1381		2SC3187	〃	
Q1521	⚠	2SC1627A	〃	or 2SC1627
Q1522	⚠	2SD1554	〃	
Q1721		2SC1740(Q,R)-L	〃	
Q1722		2SC1740(Q,R)	〃	
Q1761		2SC1740(Q,R)-L	〃	
Q1762		2SA1015(Y,GR)L	〃	
Q1763		2SC1740(Q,R)-L	〃	
Q1764		〃 -L	〃	
Q1765		2SA1015(Y,GR)L	〃	
Q1822		2SC1815(Y,GR)L	〃	
Q1921		2SC1815(Y,GR)L	〃	
Q1922		2SB642(Q,R)	〃	
IC				
IC1001		LA7930	IC	
IC1101		TA7680AP	〃	
IC1201		UPC1401C	〃	
IC1421	⚠	AN5515	〃	

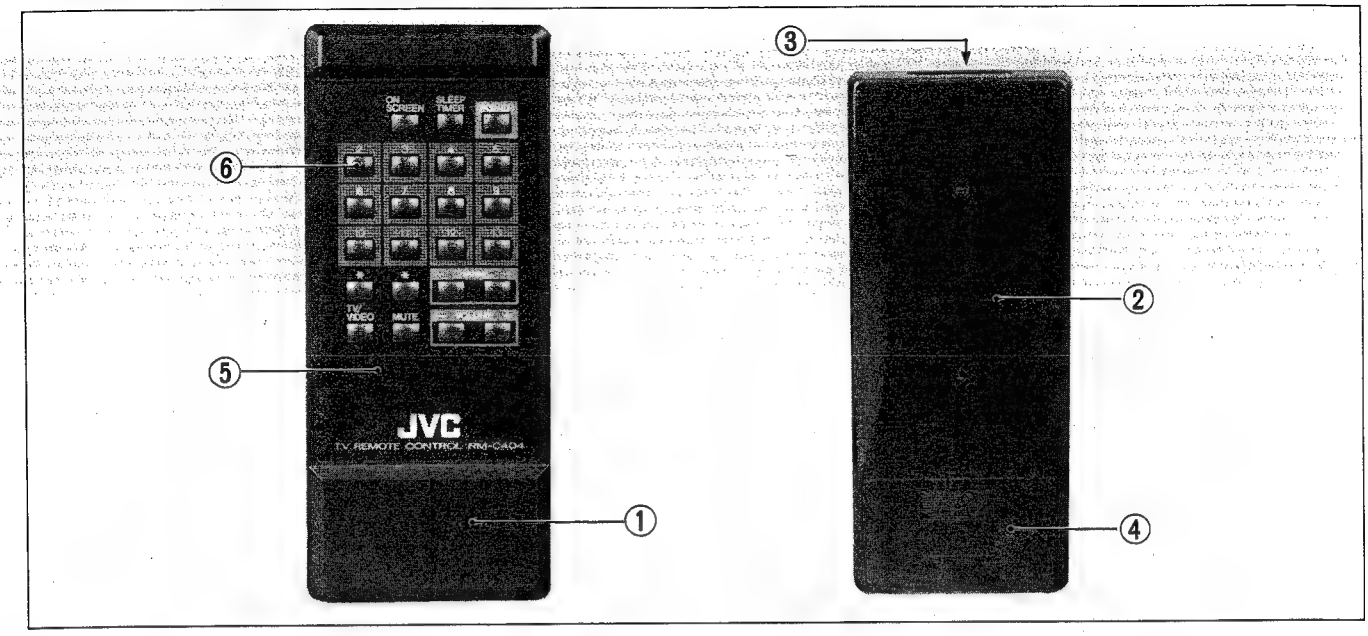
SYMBOL No.	⚠	PART No.	PART NAME	REMARK
IC1621		AN5265	IC	
IC1721		MN14821VVZ	〃	
IC1741		MN1219	〃	
IC1781		μPC1373HA(MS)	〃	
IC1791		μPD4049UBC	〃	or TC4049BP
IC1811		LA7016	〃	
IC1851		LA7016	〃	
OTHERS				
	⚠	CE40085-00BJ1	CRT Socket	
CF1101		CE40124-45A	Ceramic Trap	
CF1501		CSB503F2	Ceramic Resonat	
CF1601		A74603-C	Ceramic Filter	
CF1721		CSB500E	〃	
DL1201		CE40372-001	Delay Line	
J1621		CEX40288-001	Earphone Jack	
SF1101		CE40050-204	Saw Filter	
S1201		QSL4A13-C02	Lever Switch	Service Switch
S1701		QST3101-C03	Push Switch	Reset
S1702		QSP4H11-C03	〃	Power
S1703		〃 -C03	〃	CH+
S1704		〃 -C03	〃	TV/Video
S1705		〃 -C03	〃	Vol+
S1706		〃 -C03	〃	Vol−
S1707		〃 -C03	〃	CH. Display
S1708		〃 -C03	〃	CH. Display
S1901	⚠	**QSP2J11-C01**	〃	Main Power
UV1001	⚠	**AK7012EZ-B03**	UHF/VHF E. Tuner	
X1301		A76351-D	Crystal	

SX-9125A (POWER P.B. ASS'Y)

SYMBOL No.	⚠	PART No.	PART NAME	REMARK
RESISTOR				
R9901	⚠	QRF076K-2R0	UNF R	2Ω 7W K
R9904	⚠	QRD122J-822S	CR	8.2kΩ 1/2W J
R9905	⚠	QRF154J-471	UNF R	470Ω 15W 〃
R9906	⚠	QRD142J-224S	CR	220kΩ 1/4W 〃
R9907	⚠	QRX029J-3R9	MF R	3.9Ω 2W 〃
R9908	⚠	QRD142J-391S	CR	390Ω 1/4W 〃
R9909	⚠	QRF154J-471	UNF R	470Ω 15W 〃
CAPACITOR				
C9901~3	⚠	QCZ9025-472A	C Cap.	4700pF AC 125V P
C9904	⚠	QEU72DM-567M	E Cap.	560μF 200V M
C9905	⚠	QET52CR-106	〃	10μF 160V R
C9906	⚠	QFZ9025-104M	MF Cap.	0.1μF AC 125V M
C9907	⚠	QFZ9025-473M	〃	0.047μF AC 125V M
C9908	⚠	QCZ9016-332A	C Cap.	3300pF AC 125V M
TRANSFORMER				
T9901	⚠	CE41109-001J1	Power Transf.	

SYMBOL No.	⚠	PART No.	PART NAME	REMARK
DIODE				
D9202		1S1555-K	Si. Diode	
D9901~5	⚠	1S1887A	〃	
TRANSISTOR				
Q9201		2SB642(Q,R)	Si. Transistor	
Q9202		2SD637(Q,R)	〃	
IC				
IC9901	⚠	STR3130	IC	
OTHERS				
F9901	⚠	QMF66U1-4R0S	Fuse	4A
F9902	⚠	QMF53U1-1R25S	〃	1.25A
LF9901	⚠	CE40247-00B	Line Filter	
TH9901	⚠	A75511	Posistor	
RY9901	⚠	CESK002-001	Relay	

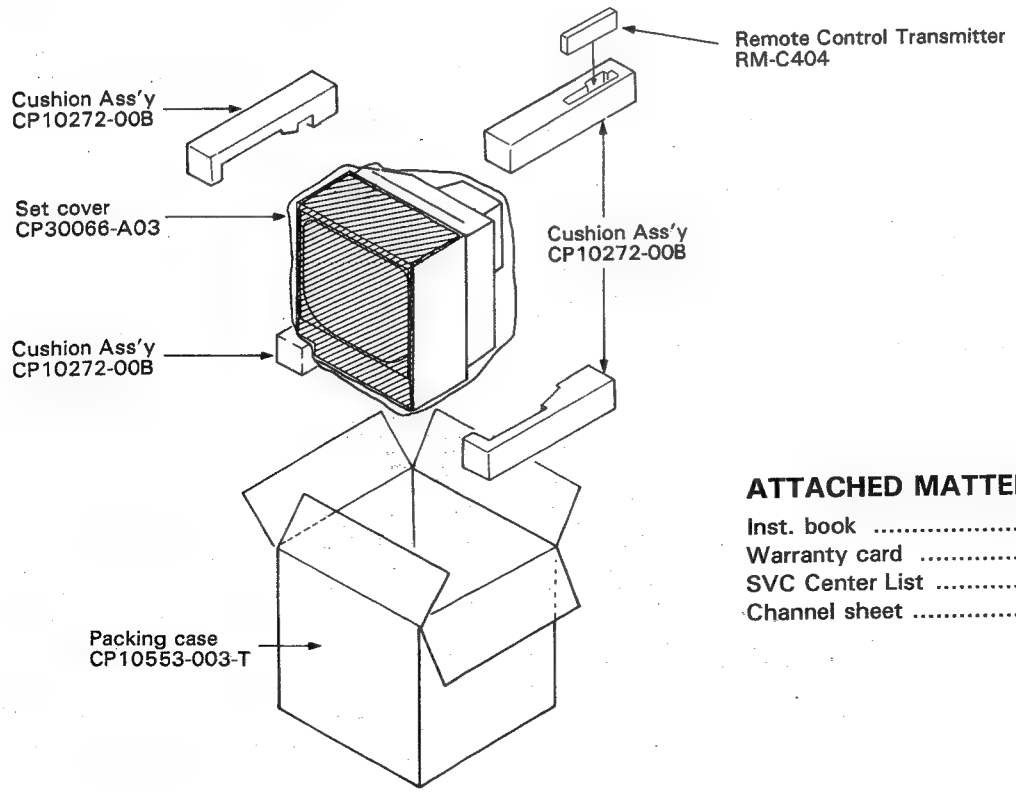
(REMOTE CONTROL TRANSMITTER RM-C404)



(REMOTE CONTROL TRANSMITTER PARTS LIST)

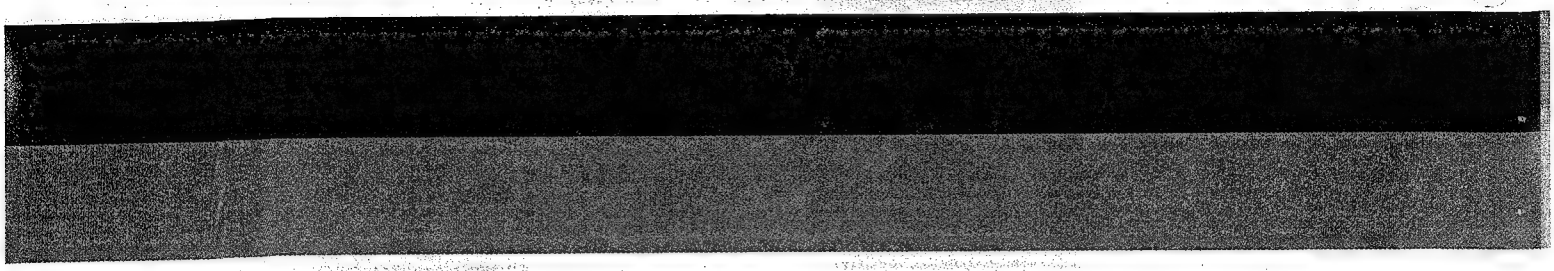
VIEW No.	SYMBOL No.	⚠	PART No.	PART NAME	REMARK
1			UR64CS119	Front Case	
2			UR64CS120	Bottom Case	
3			UR64SB125	Filter	
4			UR64EC121	Battery Cover	
5			UR64PP136AA	Panel	
6			UR64BT123B	Button	

(PACKING DIAGRAM)



ATTACHED MATTERS

Inst. book C1336-CA-IBA-T
Warranty card BT-20025H
SVC Center List BT-20071A
Channel sheet CM43794-003-T



JVC

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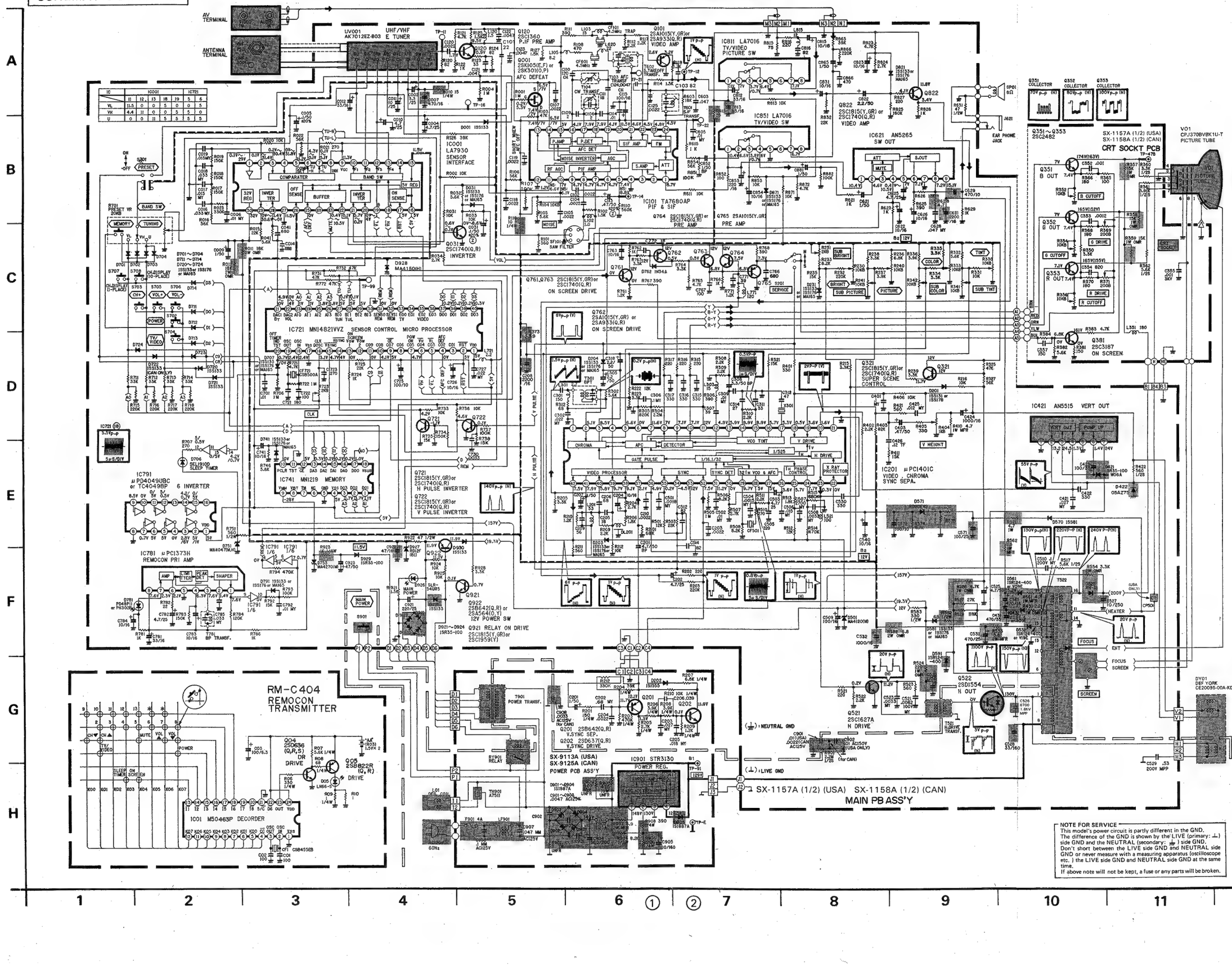
SCHEMATIC DIAGRAM


AV TERMINAL
ANTENNA TERMINAL
UIV001 AK7012EZ-803 UHF/VHF E TUNER
IC001 LA7930 SENSOR INTERFACE
IC721 MN14821VVZ SENSOR CONTROL MICRO PROCESSOR
IC791 μPD4049BC or TC4049BP 6 INVERTER
IC781 μPC1373H REMOCON PRI AMP
IC741 MN1219 MEMORY
IC101 TA7680AP PIF & SIF
IC811 LA7016 TV/VIDEO PICTURE SW
IC851 LA7016 TV/VIDEO SW
IC621 AN5265 SW OUT
IC421 AN5515 VERT OUT
IC201 μPC1401C VIDEO CHROMA SYNC SEPA.
IC901 STR3130 POWER REG.
IC01 M50463P DECORDER
CRT SOCKT PCB
RM-C404 REMOCON TRANSMITTER
SX-9113A (USA) SX-9125A (CAN) POWER PCB ASS'Y
SX-1157A (1/2) (USA) SX-1158A (1/2) (CAN) MAIN PB ASS'Y
NOTE FOR SERVICE
This model's power circuit is partly different in the GND.
The difference of the GND is shown by the LIVE (primary: ⊥) side GND and the NEUTRAL (secondary: ⏚) side GND.
Don't short between the LIVE side GND and NEUTRAL side GND or never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.

JVC C-1336(CAT) SCHEMATIC DIAGRAM

■ NOTICE

The voltage reading and waveform ware measured at each point with a multi-meter and an oscilloscope while receiving a service colour bar signal with a sufficient sensitivity. The measurements were made with each VR under the condition just after the shipment. The figures of the signal circuits may be more or less different after adjustments, so use the figures simply for reference.

Multimeter used
DC 20kΩ/V
Given figures are all DC voltages.
Sweep speed of oscilloscope
H → 20 μS/div. V → 5 mS/div.
Others → sweep speed specified

Since the schematic diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

SAFETY

FR (-WW-FR) denotes a fusible resistor which operates as a fuse. When replacing fusible resistors parts indicated with black shading (▬) in the circuit diagrams, be sure to ensure safety by using designated parts.
As to other parts too, use designated parts to maintain safety and performance.

INDICATION OF PARTS SYMBOL

Inside board (Example) SX-1158A : R1209→R209
Outside board (Example) R0001→R01

SCHEMATIC DIAGRAM INDICATION

Resistor

- Resistance value
  Without unit: [Ω] K : [kΩ] M : [MΩ]
- Rated allowable power
  Without indication : 1/6W, Others Indicated
- Type
  Without indication : Carbon resistor
  OMR : Oxide metal film resistor
  UNF : Unflammable resistor
  MF R : Metal film resistor
  FR : Fusible resistor

* Composition resistor 1/2 [W] is indicated as 1/2S or Comp.

Capacitor

- Capacitance
  Above 1 [pF] : Below 1 [μF]
- Withstand voltage
  Without indication : DC 50 [V]
  Others : DC withstand voltage [V]
  AC indicated : AC withstand voltage [V]
- Indications for electrolitic capacitors are as follows.
  (Example)
  47/50 → capacitance [μF] / withstand voltage [V]
- Type
  Without indication : Ceramic capacitor
  MY : Mylar capacitor
  MM : Metalized mylar capacitor
  PP : Polypropylene capacitor
  MPP : Metalized polypropylene capacitor
  NP : Nonpolar electrolytic capacitor
  BP : Bipolar electrolytic capacitor
  TAN. : Tantalum capacitor

Coil

Without unit : [μH]

Connection method

▭: Connector, ⟶: Receptacle
○: Wrapping or soldering

Power Supply

▬: B1 Voltage ▬ ▪ ▬: B2 Voltage (12V)
▭▪▭▪▭: 11.5V

* Respective voltage values are indicated on schematic diagram.

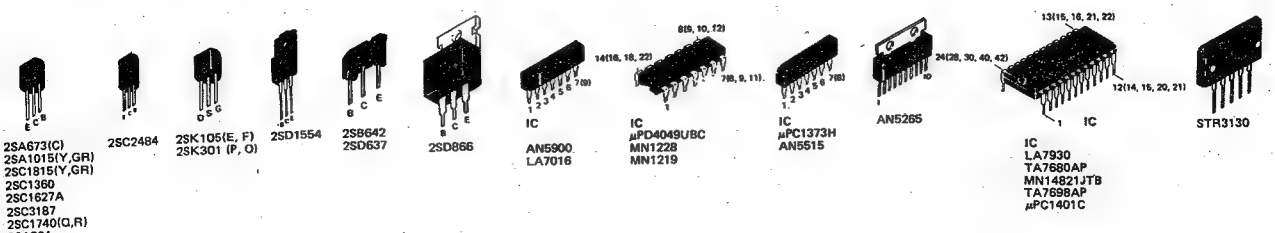
Test point & GND. symbol.

◉ : Test point by miniature GT pin
○ : Only test point display
⊥ : Live (Primary) side ground
⏚ : Neutral (Secondary) side ground

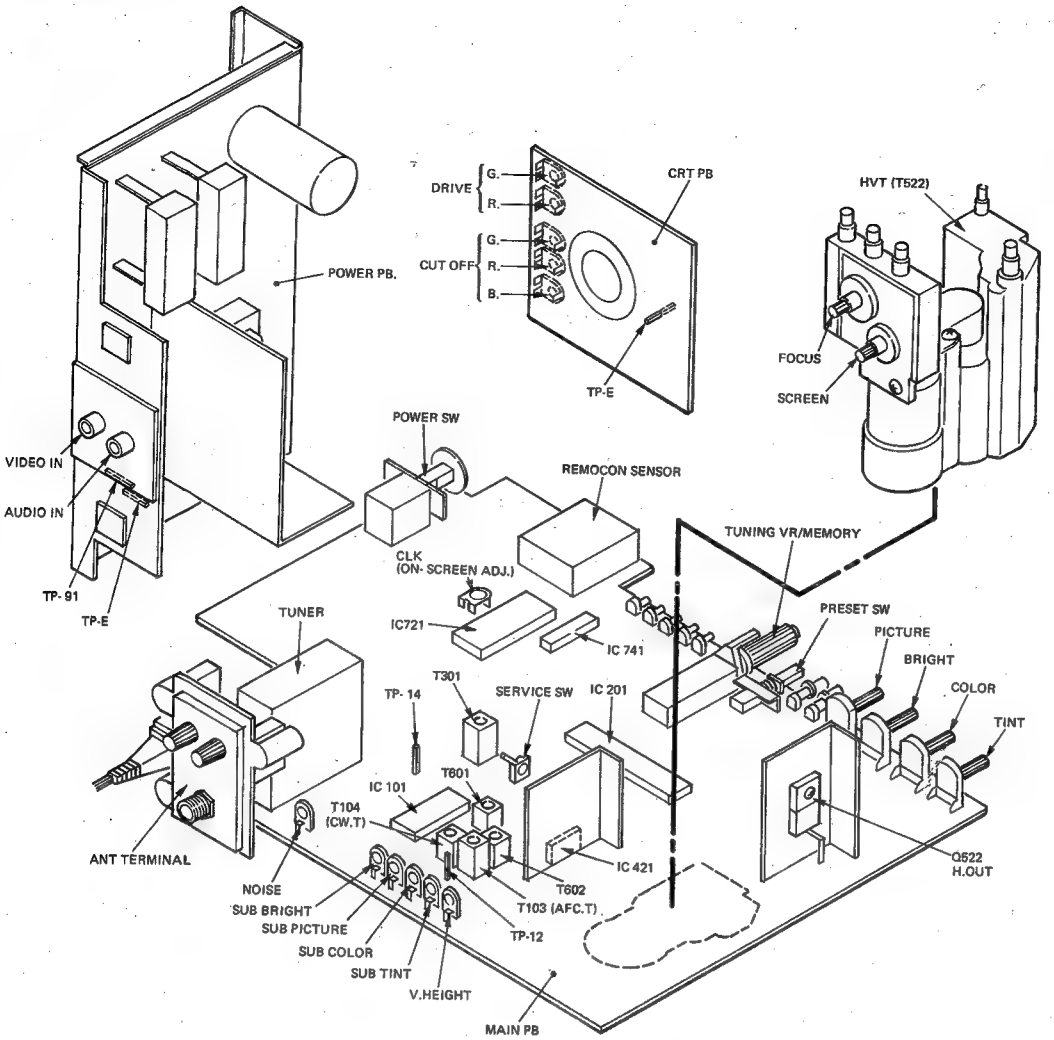
NOTE FOR SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (primary: ⊥) side GND and the NEUTRAL (secondary: ⏚) side GND.
Don't short between the LIVE side GND and NEUTRAL side GND or never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.

■ BASINGS OF TRANSISTORS & ICs



■ ALIGNMENT LOCATION

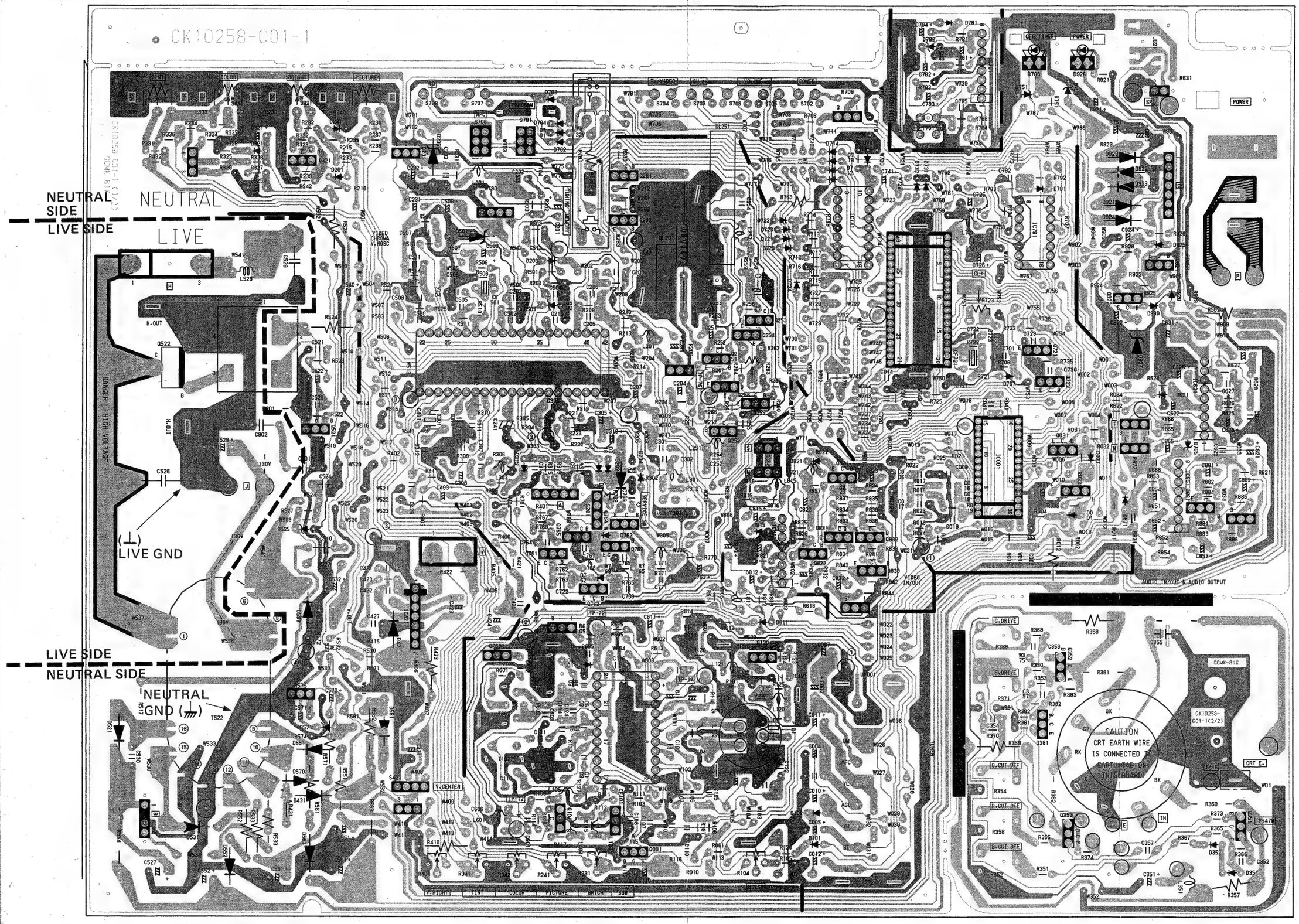


■ PARTS LIST (Shaded Parts in the schematic diagram)

Symbol No.	Parts No.	Parts Name
SX-1158A (MAIN PB ASS'Y)		
R1010	QRD149J-150S	CR
R1011	QRG029J-183	OM R
R1012	〃 -183A	〃
R1116	QRD149J-100S	CR
R1357~59	QRG019J-153S	OM R
R1373	QRD161J-3R9Y	CR
R1410	QRX019J-4R7S	MF R
R1431	〃 -2R2S	〃
R1524	QRG019J-221S	OM R
R1526	〃 -472S	〃
R1527	QRD161J-273Y	CR
R1528	〃 -683Y	〃
R1532	QRX029J-6R8	MF R
R1533	〃 -5R6A	〃
R1554	QRG029J-332	OM R
R1561	QRX019J-4R7S	MF R
R1562	〃 -1R5S	〃
R1571	〃 -4R7S	〃
R1574	QRD161J-472Y	CR
R1575	CJ39520-00V	R Block
R1582	QRD122J-680S	CR
R1628	QRD161J-4R7Y	〃
R1812	〃 -560Y	〃
R1901	QRC122K-225E	Comp. R
R1923	QRD141J-102SY	CR
C1007	QET51CR-477	E Cap.
C1208	QETB1CM-228	〃
C1423	QEU51VM-107M	〃
C1431	QETB1VM-477	〃
C1522	QET61HR-105Z	〃
C1526	QFZ0081-6701S	MPP Cap.
C1527	QEZ0077-106M	E Cap.
C1528	QET52CR-336	〃
C1531	QET51ER-477	〃
C1532	QETB1CM-108	〃
C1561	〃 -477	〃
C1571	QET61ER-107Z	〃
C1572	QET51AR-107	〃
C1629	QETB1AM-477	〃
C1631	QETB1CM-228	〃
C1813	QET61CR-336Z	〃
C1901	QCZ9016-222Z	C Cap.
C1922	QET61CR-476Z	E Cap.
T1521	CE40361-00B	H. Drive Transf.
D1421	1SR35-100-F	Si. Diode
D1422	05AZ95	Zener Diode

Symbol No.	Parts No.	Parts Name
D1431	V19E-4	Si. Diode
D1521	RH1S-LFA1	〃
D1531	1SR124-400V-F	〃
D1561	〃	〃
D1571	HZ7B2LV1	Zener Diode
D1591	1SR124-400-F	Si. Diode
D1921~24	1SR35-100-F	〃
D1925	1SS133-Y	〃
Q1521	2SC1627A	Transistor
Q1522	2SD1554	〃
IC1421	AN5515	IC
S1901	QSP2J11-C01	Power SW
UV1001	AK7012EZ-B03	VHF/UHF E Tuner
	CE40085-00BJ1	CRT Socket
SX-9125A (POWER PB ASS'Y)		
R9901	QRF076K-2R0	UNF R
R9904	QRD122J-822S	CR
R9905	QRF154J-471	UNF R
R9906	QRD142J-224S	CR
R9907	QRX029J-3R9	MF R
R9908	QRD142J-391S	CR
R9909	QRF154J-471	UNF R
C9901~3	QCZ9025-472A	C Cap.
C9904	QEU72DM-567M	E Cap.
C9905	QET52CR-106	〃
C9906	QFZ9025-104M	MF Cap.
C9907	〃 -473M	〃
C9908	QCZ9016-332A	C Cap.
T9901	CE41109-001J1	Power Transf.
D9901~5	1S1887A	Si. Diode
IC9901	STR3130	IC
F9901	QMF66U1-4R0S	Fuse
F9902	QMF53U1-1R25S	〃
LF9901	CE40247-00B	Line Filter
TH9901	A75511	Posistor
RY9901	CESK002-001	Relay
OUTSIDE OF PB ASS'Ys		
V01	CPJ370BVBK1U-T	Picture Tube
DY01	CE20095-00A-KD	Def. Yoke Ass'y
L01	C30172-P	Degaussing Coil
	QMP1650-244R	Power Cord
T1522	CJ26433-00A-KD	HV Transf.
	CJ39544-756-75	Focus Pack
	CM30926-00B-V0	Antenna Terminal Ass'y
	CM20615-A0A	AV Terminal Ass'y

BACK PATTERN



⑤ ⑥

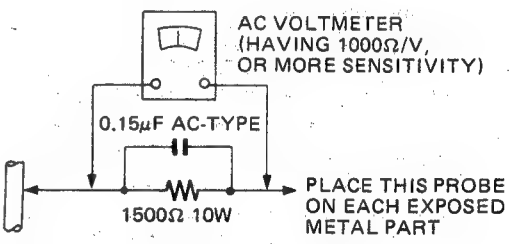
SAFETY PRECAUTION

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of receiver should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual many create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contrained in some product are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some product when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and NEUTRAL side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (primary: ⊥) side GND and the NEUTRAL (secondary: ⏚) side GND.
   Don't short between the LIVE side GND and NEUTRAL side GND or never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 VOLTAGE).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, channel selector knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1,100V AC (r.m.s.) for a period of one second.
. . . . . Withstand a voltage of 1,100V AC (r.m.s.) to an appliance rated up to 120V, and 3,000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

- **Alternate Check Method**
  Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).
  Measure the AC voltage across the resistor with the AC voltmeter.
  Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item **"How to check the high voltage hold down circuit".**

PURITY, CONVERGENCE AND WHITE BALANCE

* **The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of the schematic diagram.**

PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergency magnets assembly has been set at the factory and requires no field adjustments.
However, should the assembly be accidentally jarred or tampered with, some or all adjustments may be necessary.

COLOR PURITY & VERTICAL CENTER

Loosen yoke retaining screw (Fig. B-1). With a sharp knife cut between the picture tube and the bond. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place (Fig. B-1). The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforhand loosen it.)

1. Select no signal UHF channel.
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VR to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3.)
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. Unless correct, bring it to the center by rotating the two tabs, kept at an angle, together in either direction. (Fig. B-4)
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw (do not install wedges at this time).

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)

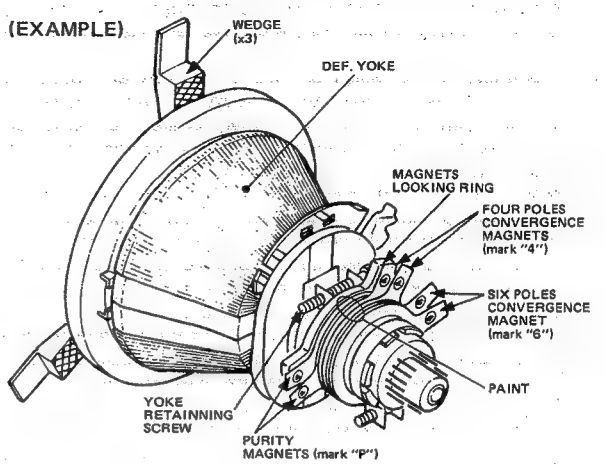


Fig. B-1

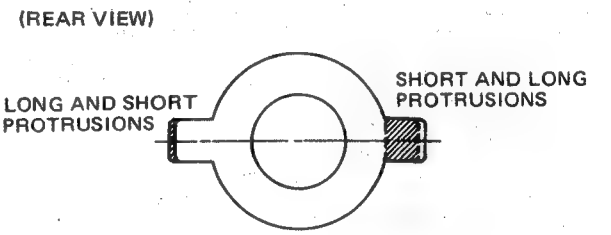


Fig. B-2

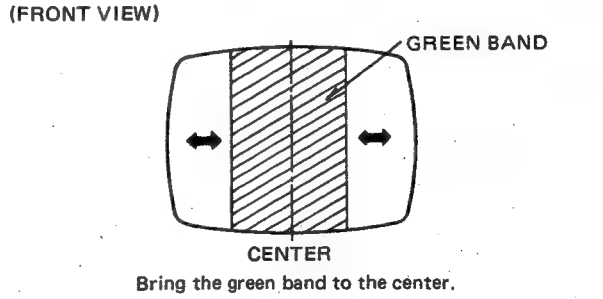
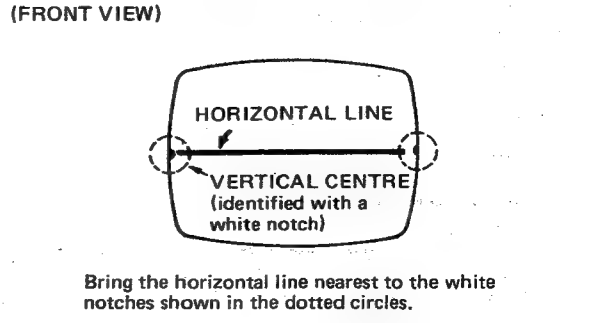


Fig. B-3


(FRONT VIEW)
HORIZONTAL LINE
VERTICAL CENTRE (identified with a white notch)
Bring the horizontal line nearest to the white notches shown in the dotted circles.

STATIC CONVERGENCE & DYNAMIC CONVERGENCE

1. Connect a crosshatch generator to the antenna terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. (Fig. B-7, 8, 9)
3. Rotate the front pair of tabs (four pole convergence magnet) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs. (Fig. B-5)
4. Rotate the rear pair of tabs (six pole convergence magnets) as a unit to minimize the separation of the magenta (R/B) and green lines. (Fig. B-6)
5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
6. Apply paint to fix six magnets
   As to models equipped with a magnet locking ring, tighten it.
7. Remove the wedge installed temporarily on the yoke.
8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9)
9. Insert three wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
10. Wedge has a backing of double sided adhesive tape. Therefore, tear off one side of adhesive tape, and fix the wedges.
11. White balance adjustment (Black & White tracking) can now be performed.

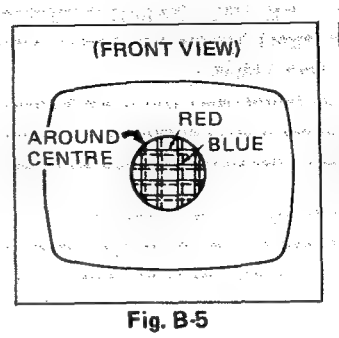


Fig. B-5

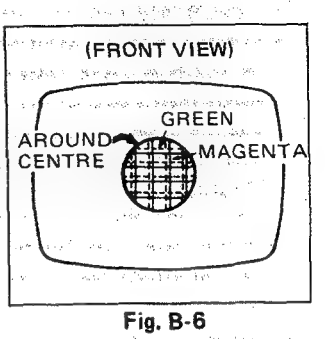


Fig. B-6

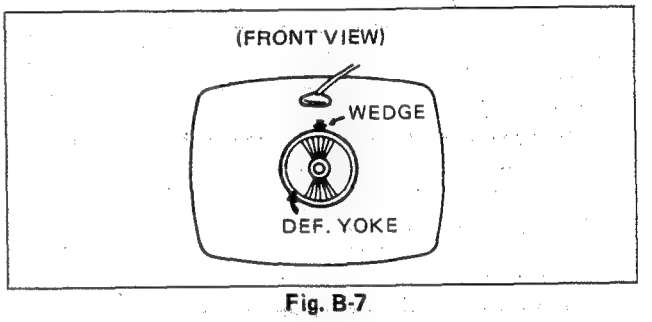
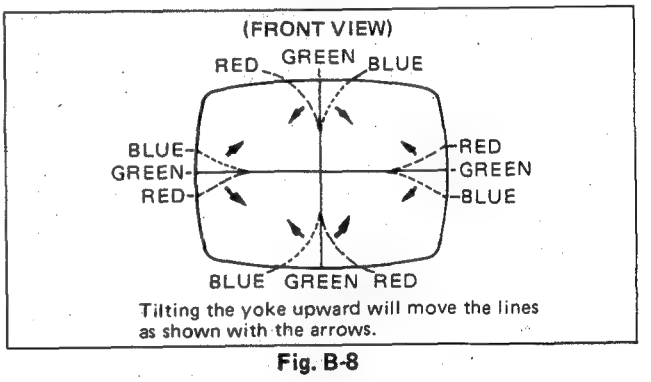
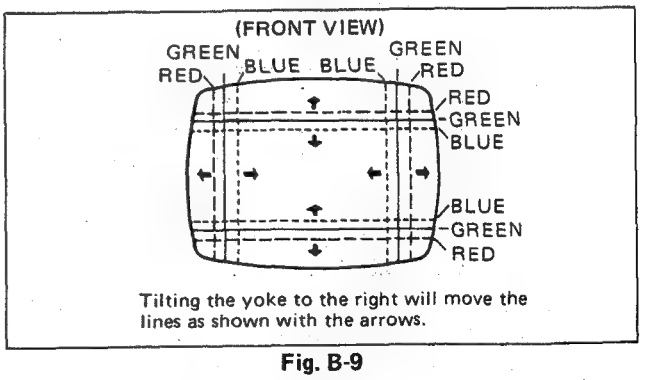


Fig. B-7



Tilting the yoke upward will move the lines as shown with the arrows.

Fig. B-8



Tilting the yoke to the right will move the lines as shown with the arrows.

Fig. B-9

WHITE BALANCE ADJUSTMENT (Black and White Tracking)

1. Display a monochrome pattern.
2. Set the RED and GREEN DRIVE VR for their mechanical center.
3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
4. Display a horizontal line. (refer to "HORIZONTAL LINE")
5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
6. Turn the CUT-OFF VRs of the color which has appeared first, clockwise by about 10° and then adjust the SCREEN VR again so that the color may shine faintly.
7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
8. Return the monochrome pattern. (refer to "HORIZONTAL LINE")
9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

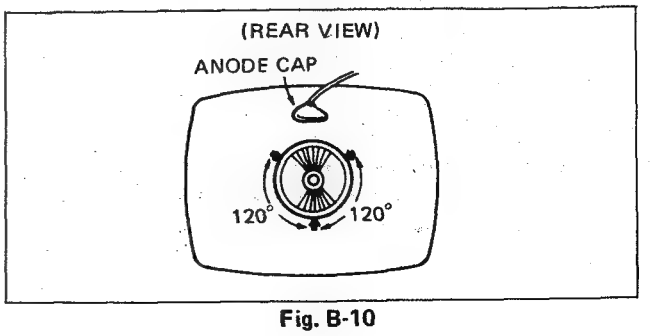


Fig. B-10

SERVICE ADJUSTMENTS

*** ADJUSTMENTS EXCEPT THE FOLLOWING DESCRIPTION ARE MENTIONED IN THE SERVICE MANUAL TEXT.**
*** SOME ITEM OF ADJUSTMENT METHOD IS NOT APPLICABLE TO SOME MODEL. IN SUCH A CASE OMIT THE ITEM.**
* Adjustments except the following description are mentioned in the service manual text.
* Use the undermentioned adjustment methods after repair or for readjustment of misadjustment.
* The locations of the under mentioned adjustment parts are described in the "Alignment Location" of the Schematic Diagram.
* Test point pins are not indicated in the printed circuit board, but in the Schematic Diagram under certain circumstances. In this case, look for test points, which are indicated in the Schematic Diagram, on the printed circuit board; and use it for test points even if there are not test point pins.

B_1 VOLTAGE

Confirm that B_1 voltage exists between TP-91 and GND.

NOTE

1. Some model's power circuit is partly different in the GND.
   The difference of the GND is shown by the LIVE (primary: ⊥) side GND and NEUTRAL (secondary: ⏚) side GND.
   In this case, use a suitable ground by checking whether LIVE side GND or NEUTRAL side GND in each schematic diagram.
2. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contained in some product are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some product when the HOT chassis is exposed.
3. The tester used should be periodically calibrated at 20kΩ/V.

SUB CONTRAST AND SUB BRIGHT

1. Set the CONTRAST, BRIGHT, PICTURE, and the COLOR knobs to the central position respectively (where they click).
   If STANDARD BUTTON provided, press it.
   (If EE SWITCH provided, Select the EE SWITCH OFF.)
2. Then align both the SUB CONTRAST VR and SUB BRIGHT VR until an ideal picture is obtained.

BLACK LEVEL AND SUB BRIGHT

- BLACK LEVEL and SUB BRIGHT VR are correlated. Do not adjust them carelessly.

1. Set the CONTRAST, BRIGHT, PICTURE and the COLOR knobs to the central position respectively (where they click).
   If STANDARD BUTTON provided, press it.
   (IF EE SWITCH provided, select the EE SWITCH OFF.)
2. Turn the BLACK LEVEL VR fully clockwise.
   Receive a high-contrast picture and adjust brightness with the SUB BRIGHT VR in the usual way.
   (Turn the SUB BRIGHT VR while observing vertical flyback line; stop turning it just before vertical flyback line turns black.)
3. Turn the BLACK LEVEL VR counterclockwise, and adjust it so that black objects appear pute black and vivid.
4. Confirm the adjusted status on every channel.

SUB TINT AND SUB COLOR

1. Set the CONTRAST, BRIGHT, PICTURE and the COLOR knobs to the central position respectively (where they click).
   If STANDARD BUTTON provided, press it.
   (If EE SWITCH provided, select the EE SWITCH OFF.)
2. Adjust the SUB TINT VR and SUB color VR to obtain human skin natural color.

SUB PICTURE

1. Set the CONT., BRIGHT, PICTURE and the COLOR knobs to the central position respectively (where they click).
   * If STANDARD BUTTON provided, press it. (If EE switch provided, select the EE SW, OFF).
2. Adjust the SUB PICTURE VR until an ideal picture is obtained.

3.58 MHz TRAP

1. Connect a color bar generator to the antenna terminal.
2. Connect oscilloscope probe to DELAY LINE output side.
3. Adjust the 3.58 MHz TRAP (T201) so that the 3.58 MHz signal is minimized. (Fig. C-1)

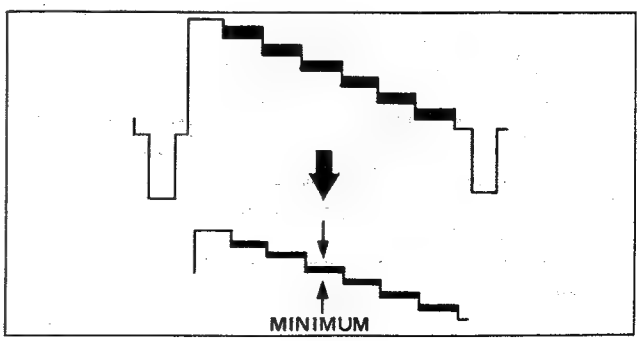


Fig. C-1

* Some item of adjustment method is NOT applicable to some model. In such a case omit the item.
* Adjustments except the following description are mentioned in the service manual test.
* Use isolation transformer when HOT chassis.

COMB FILTER

1. Connect a color bar generator to the antenna terminal.
2. Connect an oscilloscope to COMB FILTER "Y" output position (TP-42). Magnify the color signal portions of the color bar waveform so that the 3.58 MHz elements become easy to observe.
3. Adjust PHASE Transf. (T201 and T202), and minimize the 3.58 MHz elements.
4. Regulate the COMB FILTER adjustment VR to further minimize the 3.58 MHz elements. (Fig. C-1)
5. Repeat steps 3 and 4 to fully minimize the 3.58 MHz elements. (Fig. C-1)

VERTICAL HEIGHT AND LINEARITY

1. Set color bar generator to crosshatch or a pattern with which symmetry can be checked.
2. Reduce the vertical size with the VERTICAL HEIGHT VR.
3. Adjust the vertical symmetry with the VERTICAL LINEARITY VR.
4. Readjust the VERTICAL HEIGHT so that the picture extends to normal size.

VERTICAL HEIGHT

1. Set the color bar generator to crosshatch or pattern with which symmetry can be checked.
2. Adjust the vertical symmetry with the VERTICAL HEIGHT VR.

NOISE (RF A.G.C. Delay)

This control is set at the factory and rarely requires any adjustment. If a snowy picture appears on a medium to weak station adjust the noise control.

1. Turn control fully clockwise (or counterclockwise), maximum noise in picture.
2. Slowly turn VR counterclockwise (or clockwise) until snow or noise in picture just disappears.

   Note: Check operation on strong channels. If overloading occurs (bending, poor color, loss of color sync, etc.) make compromise adjustment.

4.5 MHz TRAP

1. Tune in a local color station preferably a program with the least amount of movement and continuous audio.
2. Adjusting the V. IF DET. OUT Transf. (T105) so that beating with sound signal disappears.

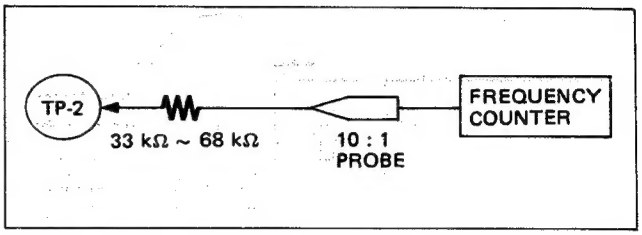
HORIZONTAL WIDTH

Adjust H. WIDTH control coil by turning it with a hexagonal adjusting bar only if RIGHT and LEFT sides of pictures can't be seen.

FOCUS

Adjust FOCUS VR for best overall definition and picture detail at normal brightness and contrast.

REFERENCE FREQUENCY OSCILLATOR



Connect as shown above and adjust C205 (ceramic trimmer capacitor) so that the oscillation frequency is 4500.000 kHz ± 20 Hz or receive UHF AIR at AFC OFF position and adjust C205 so that the AIR becomes just tuning.

HORIZONTAL OSCILLATOR

1. Set the H. FREQ. VR to the mechanical center position.
2. Connect the jumper clip between TP-33B and earth.
3. Adjust the H. FREQ. VR until picture is in view and locks or drift slowly back and forth.
4. Remove the jumper clip.
5. Make sure that the set maintains horizontal sync, when channels are switched.

COLOR SYNC.

1. Receive a color bar signal.
2. Connect two jumper wires between TP-50 and TP-E and between TP-51A and TP-51B.
3. While rotating a TRIMMER CONDENSER using a non-metallic screwdriver, adjust it until the horizontal striped patterns with color become stationary or are slowly moving.
4. Remove jumper clips.
5. Confirm that color sync is not disrupted when channels are switched.

H. CENTER

Centering is completed at the factory, although it may become distorted when CRT is changed.

In such case, selecting the H. CENTER SWITCH moves the picture left or right.

(Some model have H. CENTER TIP.)

VERTICAL CENTER

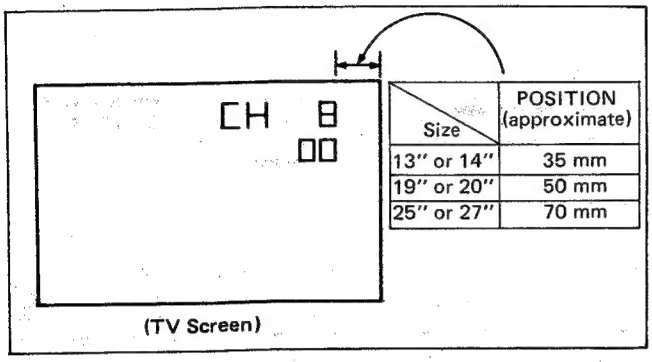
Centering is completed at the factory, although it may become distorted when CRT is changed.

In such case, selecting the V. CENTER SWITCH moves the picture up or down. (Some model have V. CENTER TIP).

* Some item of adjustment method is NOT applicable to some model. In such a case omit the item.
* Adjustments except the following description are mentioned in the service manual test.
* Use isolation transformer when HOT chassis.

ON SCREEN

1. Display characters on the screen.
2. As shown in the Fig. C-2, adjust the character positions with the CLK VR (On screen adj. VR).
3. Confirm that the characters are also located approximately at the same positions on other channels.



Size	POSITION (approximate)
13" or 14"	35 mm
19" or 20"	50 mm
25" or 27"	70 mm

Fig. C-2

HORIZONTAL LINE

- CUT-OFF SERVICE SWITCH
  Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.
  (When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear.)
- CUT-OFF SERVICE TIP
  Reconnect the CUT-OFF SERVICE TIP from N to S and a HORIZONTAL LINE will appear.
  (When returning a monochrome pattern reconnect the CUT-OFF SERVICE TIP from S to N and a monochrome pattern will appear.)
- VIDEO CUT WIRER
  Connect a jumper wire between TP-35A and TP-35B, after removing the VIDEO CUT WIRE, and a monochrome pattern will appear.
  (Reconnect the VIDEO CUT WIRE to the normal position, after removing the jumper wire from TP-35A and TP-35B.)

■ V. IF

1. Connect a color bar generator to antenna terminal. (When the signal is too strong, use the attenuator.)
2. Connect DC voltmeter (or tester) between AGC terminal of E. Tuner and earth.
3. Rotate NOISE VR so that RF. AGC voltage becomes DC 4.5 V ± 1 V.
4. Adjust CW transformer so that the indicator becomes to minimum and also confirm that picture in optimum conditions is obtained.
5. Confirm the adjustment of NOISE VR.

■ RF. AFC

1. Connect a color bar generator to antenna terminal.
2. Adjust AFC transformer so that the voltage of TP-16 becomes DC 7.0 V ± 0.5 V.
   (Confirm to swing between about 9 V and 4 V previously.)

■ S. IF

1. Tune in a local station preferably a program with the continuous audio.
2. Adjust TAKE OFF Transf. (T601) and S. IF Transf. (T602) so that the sound becomes to maximum without distortion.

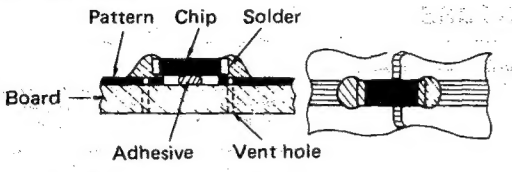
REPLACEMENT OF THE CHIP

* **CHIPS ARE NOT USED ON CERTAIN MODELS. REFER TO THE DESCRIPTIONS ON THIS PAGE ONLY WHEN WORKING ON MODELS ON WHICH CHIPS ARE EMPLOYED.**

* Replacement of the chip on printed circuit board can be performed easily as follows.

1 When mounted

[Resistor · Capacitor]

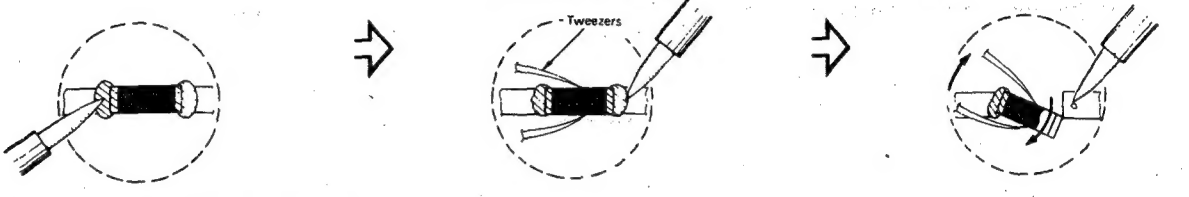


2 Removal of the chip

(1) Remove either of the soldered contacts.

(2) Hold the chip with tweezers and remove the other contact.

(3) Work the chip free from the adhesive with tweezers.

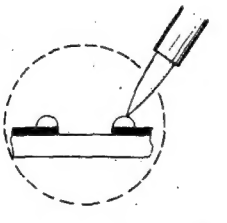


3 Preheating and soldering of chip pieces

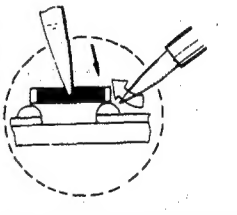
Be sure to preheat chip pieces (except the transistor) especially the capacitor before soldering with hot air, about 150°C (hair dryer or such can be used) for about 2 minutes. Then, immediately solder with an iron of about 30W.

4 Replacing the chip pieces

(1) Apply the solder to the board first.

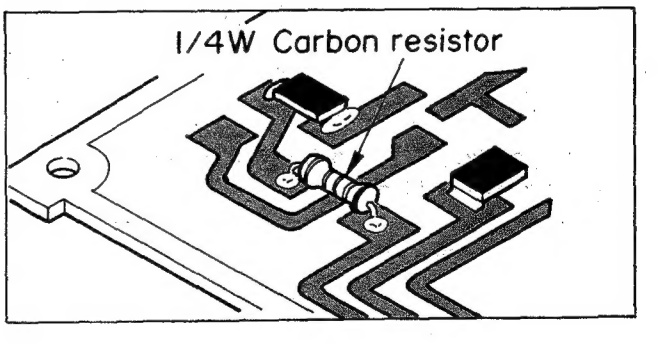


(2) Hold the chip with tweezers and solder it in place, hold the iron at a 45° angle when soldering.



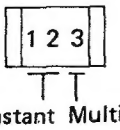
■ Discrete parts can be substitutionally mounted as shown in the figure on the right.
Mounting is also possible by passing the wires from the board front side (parts side) through the chip soldering hole (vent hole of registration part).
Substitute parts are as follows.

- Chip Metal Glaze Resistor
  → Carbon Resistor 1/4W ±5%
- Chip Ceramic Capacitor
  → Ceramic Capacitor 50V ±5%



■ **Decoding of chip parts constant terms**

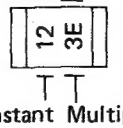
< Chip Metal Glaze Resistor >



Constant term: 12 — Multiplier: 10^3

$12 \times 10^3 = 12000\Omega$
$= 12k\Omega$

< Chip Ceramic Capacitor >



K, M, Z, P . . . . . Tolerance of ordinary type

C, P, R, S, T, U . . Temperature coefficient of temperature compensation type

Constant term: 12 — Multiplier: 10^3

$12 \times 10^3 = 12000pF$
$= 0.012\mu F$

REPLACEMENT PARTS LIST INFORMATION

*** UTILIZE THE INFORMATION ON THIS PAGE IN COMBINATION WITH THE REPLACEMENT PARTS LIST. WHEN ORDERING REPLACEMENT PARTS PLEASE SPECIFY THE PART NUMBER AS SHOWN IN THIS LIST INCLUDING PART NAME, AND MODEL NUMBER. COMPLETE INFORMATION WILL HELP EXPEDITE THE ORDER.**

PRODUCT SAFETY NOTE
Components identified by the ⚠ symbol in the PARTS LIST and the shaded areas on the Schematic have special characteristics important to safety. Before replacing any of these components read carefully the **SAFETY PRECAUTION** on Page A of this Service Manual. DO NOT degrade the safety of the set through improper servicing.

1. ABBREVIATED WORD OF RESISTORS AND CAPACITORS

RESISTOR

C R	:	Carbon Resistor
Comp. R	:	Composition Resistor
OM R	:	Oxide Metal Film Resistor
V R	:	Variable Resistor
MF R	:	Metal Film Resistor
CMF R	:	Coating Metal Film Resistor
UNF R	:	Unflammable Resistor
F R	:	Fusible Resistor
CH MG R	:	Chip Metal Glaze Resistor

CAPACITOR

C Cap.	:	Ceramic Capacitor
M Cap.	:	Mylar Capacitor
E Cap.	:	Electrolytic Capacitor
BP E Cap.	:	Bi-Polar (or Non-Polar) Electrolytic Capacitor
MM Cap.	:	Metalized Mylar Capacitor
PP Cap.	:	Polypropylene Capacitor
MPP Cap.	:	Metalized PP Capacitor
PS Cap.	:	Polystyrol Capacitor
Tan. Cap.	:	Tantal Capacitor
CH C Cap.	:	Chip Ceramic Capacitor

2. FOLLOWING RESISTORS AND CAPACITORS OF STANDARD ELECTRICAL COMPONENTS ARE OMITTED FROM THIS PARTS LIST. EACH PART NUMBER OF THESE STANDARD REPLACEMENT COMPONENTS IS DEFINED AS FOLLOWS.

Carbon Resistor (C R): Lead form (—⊂⊃—)

Rating	Part No.
¼W	QRD141J-□□□ (CR: ¼W; Tolerance; Lead form; Constant term)
½W	QRD121J-□□□

Composition Resistor (Comp. R): Lead form (—⊂⊃—)

Rating	Part No.
½W	QRC121K-□□□ (Comp. R: ½W; Tolerance; Lead form; Constant term)

Mylar Capacitor (M Cap.): Lead form ( )

Withstand Voltage	Part No.
50V	QFM41HK-□□□ (M Cap.: Lead form; 50V; Tolerance; Constant term)
100V	QFM42AK-□□□
200V	QFM42DM-□□□

3. DECODING OF TOLERANCE AND CONSTANT TERM

TOLERANCE

J: ±5% K: ±10% M: ±20% N: ±30% H: $^{+50}_{-10}$%

Z: $^{+80}_{-20}$% P: $^{+100}_{-0}$% R: $^{+30}_{-10}$% F: ±1%

CONSTANT TERM

• Carbon Resistor (¼W, ±5% Tolerance)

QRD141J-□□□ (CONSTANT TERM.)

- □□□ → 2.7Ω → QRD141J-2R7
- 1R0 → 1.0Ω
- 47kΩ → 47 x 10³ → QRD141J-473
- 9R7 → 9.7Ω
- 10□ → 10□ means 10 x 10□ (Ω)
- 82□ → 82□ means 82 x 10□ (Ω)

Ceramic Capacitor (C Cap.): Lead form ( )

Withstand Voltage	Parts No.
25V	QCS11EJ-□□□ (C Cap.; 25V; Constant term; Lead form; Tolerance)
50V	QCS11HP-□□□
500V	QCS12HP-□□□

Electrolytic Capacitor (E Cap.): Lead form ( )

Withstand Voltage	Parts No.
6.3V	QET40JR-□□□ (E Cap.; 6.3V; Constant term; Lead form; Tolerance)
10V	QET41AR-□□□
16V	QET41CR-□□□
25V	QET41ER-□□□
50V	QET41HR-□□□

Chip Metal Glaze Resistor (CH MG R)

Chip name	Chip No.	Substitutional Part No.
CH MG R	QRS148J-□□□ (CH MG R; Constant term; Tolerance; 1/4W; Chip)	QRD141J-□□□ CR 1/4W ±5%

Chip Ceramic Capacitor (CH C Cap)

Chip name	Chip No.	Substitutional Part No.
CH C Cap	QCS81HJ-□□□ (CH C Cap; 50V; Constant term; Chip; Tolerance)	QCS11HJ-□□□ C Cap 50V ±5%

• Ceramic Capacitor (50 Volts, ±5% Tolerance)

QCS11HJ-□□□ (CONSTANT TERM.)

- □□□ → 5pF → QCS11HJ-5R0
- 1R0 → 1.0pF
- 680pF → 68 x 10¹ → QCS11HJ-681
- 8R0 → 8.0pF
- 3300pF → 33 x 10² → QCS11HJ-332
- 10□ → 10□ means 10 x 10□ (pF)
- 88□ → 88□ means 88 x 10□ (pF)